Medication use and medicine-related problems (MRPs) experienced by South Asian (SA) and Middle Eastern (ME) patients with chronic diseases in primary care in the UK

Thesis submitted in accordance with the requirements of the University College London (UCL) for the degree of Doctor of Philosophy by

Faten Kais Alhomoud
Department of Practice and Policy
UCL School of Pharmacy
University College London
May 2014
Plagiarism statement

This thesis research conducted in the School of Pharmacy, University College London between January 2011 to May 2014 under the supervision of Professor Felicity Smith, Professor Soraya Dhillon and Dr. Zoe Aslanpour. I certify that the research described is original and that any parts of the work that have been conducted by collaboration are clearly indicated. I also certify that I have written all the text here and have clearly indicated by suitable citation any part of this dissertation that has already appeared in publication.

________________________________________   _______________________________
Signature                                      Date
Acknowledgements

Dedicated with love to all who have supported me

The work with this thesis has been extensive and tiring but in the first place exciting, instructive and fun.

To Allah, thank you for giving me the strength, will and patience to complete this work, and surrounding me with the most wonderful people during my PhD years.

To people who I cherish most:

My loving parents: firstly, a thank you from heart must go to my mother Zainab Alghazali who sacrificed her life only for her family. Big thanks must go to my father Kais Alhomoud who worked very hard all his life just for us. Thank you for your encouragement, endless prayers, love, support and at the first place for raising me up and enable me to be the person that I am today. My mother told me that holding a PhD degree was a dream that did not come true when she was young because she was taking care of her ill mother. My father also told me that one of his dreams when he was young was having a PhD but it was impossible at that time because of the war between Iraq and Iran. Therefore, I would like to dedicate with love this thesis to both of you.

My wonderful siblings: Farah, Eman, Ayman and Mohammed. I am forever indebted to you for your prayers, enduring love, selfless support and for putting up during the writing up stage. I am really grateful for inspiring and giving me the hope to finish this work and return back to you.

My supervisors: Professor Felicity Smith, Professor Soraya Dhillon and Dr. Zoe Aslanpour. This project would have not been possible without your excellent guidance, thorough, advice, support and encouragement. I would like to express my deep gratitude to my supervisor, Professor Felicity Smith for her guidance and
advice over the past years. I’m thankful to her for non countable time and efferent she provided to teach me every aspect in the research field.

My sincere thanks and appreciation must go to Professor Soraya Dhillon for helping me to develop my skills and confidence as a researcher, and above all for believing in me. I especially thank her for her motherly support and thoughtfulness. Her wide knowledge and her logical way of thinking have been of great value for me.

I also wish to thank Dr. Zoe Alsanpour for her friendship and encouragement with her warm smile.

My friends: it is impossible to mention everyone who has made a difference to my work, but I would especially like to thank Norkasihan Ibrahim, Mariam Adio Wahab and Ahmad Ameer for their continuous help, support and encouragement and for being with me at every stage of the writing up.

Fatma Alhatmi, Asma Fikri, Aljawharah Alqathami, Mai Almani, Rand Alattar, Reem Alkhanbashi thank you for listening to me in the times I was so frustrated, and for supporting me and for making London feel like home.

My gratitude goes to all the community pharmacists whom without their participation and contributions this study would not have been possible. Special thanks to them for welcoming me to their pharmacies and helping me in any way they could.

A special thanks to all the participants who were so amenable, and provided me with the information in order to develop insight into this research area. Without their active participation there would be no study.

Finally, many thanks to Ministry of Higher Education in Saudi Arabia for giving me the opportunity to continue my education, and for funding my scholarship.
Abstract

Background

Ethnic minority groups (EMGs), including South Asian and Middle Eastern populations, often have a high prevalence of chronic diseases. This may lead to comorbidities, multiple drug therapies and consequently medicine-related problems (MRPs). People from different cultural backgrounds may experience language barriers, or demonstrate different beliefs and experiences. These people may have different needs and expectations from health and pharmacy services which may affect their ability to use medicines effectively. It is acknowledged that EMGs have experienced inequalities in health and in accessing healthcare services. There have been many studies on health problems of EMGs especially regarding access to care but there has been little research which specifically examines medicines use. Thus, the aim of this study was to characterise and examine MRPs from the perspective of SA and ME patients and to identify reasons which may contribute to MRPs.

Method

The study was a cross-sectional study. Patients were from SA and ME origins, aged over 18 and prescribed three or more regular medicines. Patients were identified through previous medicine use reports (MUR), patient medication records (PMR) or when presenting with a prescription. The data were collected in 80 face-to-face semi-structured interviews in seven pharmacies in London using MRPs tool. Interviews were audio-taped; transcribed verbatim and analysed thematically using Gordon’s coding frame and Nvivo 10 software.

Results

Interviews were held with 80 patients. Final analysis showed the following types of MRPs that influenced adherence and informed decision-making among participants: adverse drug reactions and drug interactions; intentional non-compliance; cognitive, physical and sensory problems; and issues with concurrent use of herbal
and alternative therapies. Problems with drug-prescribing; lack of information; monitoring and review; repeat prescriptions; GP surgery and pharmacy service were also identified. Interviews revealed that many factors may contribute to MRPs occurrence and some appeared to be specific to SA and ME cultures. These factors comprised religious practices and beliefs, extent of family support, and travelling abroad back to patient’s home land or to take religious journeys. Perceptions of healthcare providers, difficulty consulting a doctor of the same gender, lack of referrals to specialised care, language and communication barriers, lack of translated resources, illiteracy, lack of involvement in the treatment decisions, lack of knowledge and understanding (e.g., problems with source, delivery, type and timing of information) may also contribute to the problems. However, other reported factors were similar to the general population.

This thesis provided evidence that non-adherence to medications and poor health status among SA and ME patients is a significant problem of a striking magnitude. The current study also highlighted differences between SAs and MEs participating in the study and so far it is the only one to propose a tool that can be used in SA and ME populations to identify MRPs and to detect factors that may contribute to the problems.

**Discussion and Conclusion**

This study demonstrated that SA and ME patients have their own problems and needs with both medicine use and service access. It also highlighted the crucial role that patients play in the management of their own illnesses. By uncovering particular problems experienced by these groups the study can inform healthcare professionals to support SA and ME patients in the use of their medicines; for example, developing medication use review further and adding the specific issues that were reported by SA and ME groups. Development of pharmaceutical care plans specific for SA and ME groups is also recommended. Interventions tailored to patients’ needs and wants may also be required to improve medication use and service access.
Table of contents

Chapter 1  Introduction and background ............................................................... 24
  1.1  Chronic diseases .......................................................................................... 24
  1.2  Ethnic Minority Groups (EMGs) and health inequalities ......................... 27
  1.3  Medicine-related problems (MRPs) ............................................................ 33
    1.3.1  Terminologies, definitions and classifications of MRPs ..................... 34
    1.3.2  Potential causes of medicine-related problems ................................. 38
    1.3.3  Identifying, resolving and preventing MRPs in primary care ............. 56
    1.3.4  Community pharmacists’ role in pharmaceutical care ...................... 59
Chapter 2  Medicine use and medicine-related problems (MRPs) experienced by
 ethnic minority patients in the United Kingdom: a review.  .................................. 66
  2.1  Materials and Methods ............................................................................... 66
    2.1.1  Data sources ......................................................................................... 66
    2.1.2  Search terms and search strategy ........................................................ 67
    2.1.3  Selection criteria .................................................................................. 68
    2.1.4  Process of data extraction ................................................................... 68
  2.2  Results .......................................................................................................... 70
    2.2.1  Type(s) and possible cause(s) of MRPs identified across studies ........ 72
    2.2.2  Recommendations made to support ethnic minority patients in the
          use of medicines ...................................................................................... 74
  2.3  Discussion .................................................................................................... 75
  2.4  Conclusion ................................................................................................... 77
2.5 Implications for further research .............................................................. 78
2.6 Study aim and objectives ........................................................................ 79

Chapter 3  Research context and methodology of medications use and medicine-related problems (MRPs) experienced by South Asian (SA) and Middle Eastern (ME) patients with chronic diseases in primary care in the UK ........................................ 80

3.1 Theoretical or conceptual Framework, and rationale for the chosen research methods .................................................................................................................. 80

3.2 Methods ..................................................................................................... 103
   3.2.1 Study design ....................................................................................... 103
   3.2.2 Study setting ...................................................................................... 104
   3.2.3 Study sample ...................................................................................... 106
   3.2.4 Translation of the instruments and transcripts .................................... 114
   3.2.5 Data analysis ...................................................................................... 118
   3.2.6 Reliability of the results ..................................................................... 124
   3.2.7 Validity of the results ......................................................................... 126
   3.2.8 Sample representativeness ................................................................. 127
   3.2.9 Generalisability .................................................................................. 128
   3.2.10 Ethical approval ................................................................................ 128
   3.2.11 Pilot work and its impact on the development of the study ............. 131

Chapter 4  Recruitment, response rates and characteristics of the sample ...... 135

4.1 Recruitment, the response rate and characteristics of the participating pharmacies and patients ........................................................................................................... 135
   4.1.1 Pharmacies ......................................................................................... 135
   4.1.2 Patients .............................................................................................. 141
4.2 Challenges in recruitment and face-to-face interview of research participants ................................................................................................................. 153

4.3 Mean length of interviews, start time of the interviews and presence of other people during the interviews .................................................................................................................. 154

Chapter 5 Results A description of the MRPs and contributory factors to the MRPs that may be similar to the general population from patients’ perspectives .......................................................................................................................... 157

5.1 A description of the medicine-related problems documented at the interviews ........................................................................................................................................ 157

5.1.1 MRP category 1 – Adverse drug reaction and drug interactions ...... 159
5.1.2 MRP category 2 – Intentional non-compliance ........................................ 162
5.1.3 MRP category 3 – Cognitive, physical and sensory problems .......... 168
5.1.4 MRP category 4 – Problems with non-prescription medicines ......... 169
5.1.5 MRP category 5 - Problems with drug-prescribing......................... 170
5.1.6 MRP category 6 – Interface, monitoring and review problems ...... 172
5.1.7 MRP category 7 – Lack of information or discussion ...................... 173
5.1.8 MRP category 8 – Problems with repeat prescriptions ................. 175
5.1.9 MRP category 9 – GP surgery and pharmacy service problems ...... 175

5.2 Contributory factors to medicine-related problems that were identified to be similar the general population ................................................................................................................. 176

5.2.1 Concerns about and management of side effects ......................... 176
5.2.2 Beliefs about severity of disease, control of its symptoms and perceptions of the need for medication ................................................................. 181
5.2.3 Cognitive, physical and sensory problems affecting the use of medicines ................................................................................................................ 186
5.2.4 Problems with repeat prescriptions ................................................. 192
5.2.5 Problems attributed to access to, and organisation of, services........196

5.2.6 Miscellaneous........................................................................................................202

Chapter 6 Contributory factors to MRPs that may be specific to SA and ME cultures.................................................................205

6.1 Religious practices and beliefs ........................................................................205

6.2 Travelling abroad/ being away from home.........................................................208

6.3 The extent of family support/help with medicines reported by participants .................................................................211

6.4 Problems with use of non-prescription medicines ...........................................218

6.5 Problems with the source, delivery, type and timing of information, which may lead to lack of information and/or understanding about the use of medicines ...........................................................................................................220

6.6 Perceptions of healthcare professionals and difficulties related to access and organisation of the healthcare system.........................................................239

Chapter 7 Comparing South Asian and Middle Eastern participants ...........................................247

Chapter 8 The adaptations made to the original MRPs questionnaire and coding frame for the use of SA and ME groups.............................................................................................................254

8.1 Description of Gordon’s MRPs questionnaire and recommendations that should be made to the original questionnaire for the use of SA and ME groups.................................................................254

8.2 Differences in the types of MRPs identified between the present study and Gordon et al.’s studies, and the recommendations for the coding frame ........262

Chapter 9 The perspectives of pharmacists on MRPs identified and recommendations made by the researcher .........................................................270

9.1 The perspectives of pharmacists on issues specific to SA and ME groups that influenced adherence and informed decision making.................................270
9.2 The perspectives of pharmacists on recommendations made to support SA and ME groups in their use of medicines .......................................................... 275

Chapter 10 8-item Modified Morisky Adherence Scale (MMAS) ...................... 284

Chapter 11 Discussion .......................................................................................... 292

11.1 Main key findings and implications of the results ........................................ 293
11.2 Personal reflections about the research ...................................................... 314
11.3 Strengths and limitations of the study ....................................................... 321
11.4 Implications for practice and policy ........................................................... 322
11.5 Suggestions for future work ...................................................................... 327
11.6 Research contributions ............................................................................. 328

Chapter 12 Conclusion ......................................................................................... 329
List of Tables

Table 3-1: The tools that were selected in the current study to explore MRPs, assess non-adherence to medications, and measure health status respectively. ................................................................. 102
Table 3-2: Summary of the methods used to fulfil the research objectives. ................. 104
Table 3-3: The number of SAs and Other ethnic groups in Camden, Brent, Harrow and Westminster boroughs according to the Greater London Authority 2011 (GLA, 2011). .............................................................................................................................. 105
Table 4-1: The recruitment methods used and response rate of pharmacies in each PCT.................................................................................................................................................. 137
Table 4-2: Characteristics of participating pharmacies. .................................................. 139
Table 4-3: Number of recruits and response rate in each pharmacy. ............................ 142
Table 4-4: Characteristics of the 80 participants. ............................................................ 143
Table 4-5: Type and number of prescription medicines documented as used by the interview participants (n=79). ................................................................................................................................. 147
Table 4-6: Twenty-one most common medicines used by the interview participants. .................................................................................................................................................................................. 149
Table 4-7: Type and number of non-prescription medicines used by interview participants (n=42). .............................................................................................................................................................. 150
Table 4-8: Participant numbers reporting problems in EQ-5D dimensions for 79 participants. .......................................................................................................................................................................................... 151
Table 5-1: Number and percentage of MRPs identified for the 73 interview participants. .................................................................................................................................................................................. 158
Table 5-2: Number of participants reporting ADRs and the types of medicines involved.................................................................................................................................................................................. 161
Table 5-3: Number and percentage of interview participants self-reporting the frequency of their intentional non-compliance using a Likert scale. ...................................................... 163
Table 5-4: Number of participants and types of medicines implicated in intentional non-compliance. .................................................................................................................................................................................. 165
Table 5-5: Number and percentage of interview participants self-reporting the frequency of their unintentional non-compliance using a Likert scale. .......................................... 168
Table 5-6: The types of medicines associated with drug-prescribing problems shown for each participant........................................................................................................................................171
Table 5-7: Number and percentage of participants reporting details of their prescription medicines (n=79). ........................................................................................................................................ 174
Table 5-8: Quotes of participants highlighting some changes made to their medicines as a consequence of experiencing side effects with them.........................178
Table 5-9: Quotes of actions taken by participants when forgetting to take medicines. ..............................................................................................................................................189
Table 9-1: Statements developed based on semi-structured data used in the MRPs questionnaire. ........................................................................................................................................271
Table 9-2: Recommendation made by the researcher and the pharmacists’ responses to these recommendations. .................................................................276
Table 10-1: Twenty-one participants’ adherence behaviours based on MRPs interview data and MMAS data. .......................................................................................286
List of Figures

Figure 1-1: Flow diagram of thesis content. ................................................................. 65
Figure 2-1: Flow chart of data extraction................................................................. 69
Figure 2-2: Summary of literature review search process................................. 71
Figure 3-1: A flow chart of the design of the main study. ............................. 113
Figure 4-1: The number of prescription medicines used by interview participants (n=79). ......................................................................................................................... 145
Figure 4-2: Number of interview participants having medicines from each BNF chapter. .................................................................................................................................. 146
Figure 4-3: Mean self-rated health status of participants on visual analogue scale of EQ-5D-3L ......................................................................................................................... 152
Figure 5-1: the number of interview participants having at least one MRP in each category................................................................................................................................. 159
Figure 6-1: Sources reported by participants from which they obtained information about their medicines. ................................................................................................................. 221
Figure 9-1: Percentages of pharmacists’ responses to issues raised in semi-structured interviews......................................................................................................................... 272
List of Appendices

Appendix 1: An overview of MRPs classification system ........................................ 358
Appendix 2: A list of search terms used for this review. ........................................ 362
Appendix 3: Studies on medicine use and medicine-related problems experienced
by ethnic minority patients in the UK. ................................................................. 363
Appendix 4: Patient records review in pharmacy ............................................... 368
Appendix 5: MRPs tool for Gordon (English and Arabic versions) ......................... 369
Appendix 6: Morisky 8-items tool (English and Arabic versions). ............................ 381
Appendix 7: EQ-5D-3L tool (English and Arabic versions). ................................. 383
Appendix 8: Pharmacist invitation letter ............................................................. 389
Appendix 9: A summary of the study to be sent to the community pharmacists... 390
Appendix 10: A letter to thank pharmacist for taking part in the study. ............. 393
Appendix 11: Patient invitation letter ................................................................. 394
Appendix 12: Patient information sheet .............................................................. 395
Appendix 13: Patient consent form .................................................................... 397
Appendix 14: Gordon et al 2005 categorisation sheet. ....................................... 398
Appendix 15: Research Ethics Committee (REC) application form ..................... 399
Appendix 16: The provisional decision letter from NHS REC. ............................ 432
Appendix 17: The response letter to NHS REC. ................................................. 437
Appendix 18: The letter of favourable opinion from the NHS REC. .................... 445
Appendix 19: NHS R & D form .......................................................................... 447
Appendix 20: NHS Site Specific Information (SSI) Form. .................................. 483
Appendix 21: R&D approvals from North West London and North Central London
R&D offices ........................................................................................................... 492
Appendix 22: Pharmacies visiting timetables by Months ..................................... 495
Appendix 23: Gantt chart for the study ................................................................. 496
Appendix 24: Case studies of 80 participants ....................................................... 500
Appendix 25: Publications ................................................................................... 512
Publications


Presentations

(1) **Alhomoud, F.,** Smith, F.J., Aslanpour, Z., Dhillon, S. Medicine-related problems (MRPs) in South Asian (SA) and Middle Eastern (ME) patients in the UK. Presented at UCL PhD research day, London, United Kingdom, 4th April, 2014.

(2) **Alhomoud, F.,** Smith, F.J., Aslanpour, Z., Dhillon, S. Medicine use and medicine-related problems in South Asian and Middle Eastern patients with chronic diseases in the UK. Presented at 19th Annual conference of Health Service Research and Pharmacy Practice (HSRPP), Lancashire, United Kingdom, 9-10 May, 2013.

Posters

(1) **Alhomoud, F.,** Smith, F.J., Aslanpour, Z., Dhillon, S. Medicine-related problems (MRPs) in South Asian (SA) and Middle Eastern (ME) patients in the UK. Presented at 42nd Annual conference of European Society of Clinical Pharmacy (ESCP) symposium on clinical pharmacy, Prague, Czech Republic, 16-18 October, 2013.

(2) **Alhomoud, F.,** Smith, F.J., Aslanpour, Z., Dhillon, S. Medicine use and medicine-related problems in South Asian and Middle Eastern patients with chronic diseases in the UK. Presented at UCL PhD research day, London, United Kingdom, 14th December, 2012.
Overview of thesis contents

Chapter 1 – Introduction and background

The introduction presents background information on chronic diseases, ethnic minority groups and medicine-related problems. The background information summarises the current knowledge in these areas and highlights the gaps in the literature and the importance of doing this research and finally presents a flow diagram on how this research project addresses the knowledge gap. This chapter shows that ethnic minority groups (EMGs) are increasing and they often have a high prevalence of chronic diseases. This may lead to co-morbidities, multiple drug therapies and consequently MRPs. People from different cultural backgrounds may experience language barriers, or demonstrate different beliefs and experiences. These people may have different needs and expectations of health and pharmacy services which may affect their ability to use medicines effectively. It is acknowledged that EMGs have experienced inequalities in health and in accessing healthcare services. There have been many studies on health problems of EMGs especially regarding access to care but there has been little research which specifically examines medicine use.

Chapter 2 – Medicine use and medicine-related problems experienced by ethnic minority patients in the UK: a review

The focus of this chapter was to review the published studies on MRPs in EMGs in the UK. The aim of this review was to establish type(s) and possible contributing factor(s) of MRPs experienced by ethnic minority populations in the UK and to identify interventions or recommendations to support these groups in their use of medicines. This review highlights that ethnic minority patients have their own problems and needs with regard to both medicine use and service access. Little evidence is known of what influences MRPs among ethnic minority groups, despite the increased diversification of populations in countries throughout the world. It was highlighted that one of the most striking reasons for the lack of progress in the research might be the absence of the patient’s perspective. Therefore, there is a need for further research to be done in this area and for these patient groups. This review has been published in the International Journal of Pharmacy Practice.

Chapter 3 – Research context and methodology

This chapter reports the theoretical framework of the main study and justifies the selection of particular measures and procedures to achieve the study objectives. It also describes the research design and methods used in this research for data collection to meet the aim and objectives of the main study. Finally, it reports the
outcomes of the preliminary study conducted to identify logistical problems for the main study. This study was a cross-sectional study. Patients were from SA and ME origins, aged over 18 and prescribed three or more regular medicines. Patients were identified through previous medicine use reports (MUR), patient medication records (PMR) or when presenting with a prescription. The data were collected in 80 face-to-face semi-structured interviews in seven pharmacies in London using MRP tool, 8-item MMAS, and EQ-5D-3L. Interviews were audio-taped; transcribed verbatim and analysed thematically using Gordon’s coding frame and Nvivo 10 software. SPSS 21 software was used to analyse quantitative data. The pilot work indicated that the potential response rate for patients in the main study would be high, if the recommended steps to increase response rate in Chapter 3 were closely followed. Inviting patients when they presented in the pharmacy was the best method to recruit patients. The pilot also showed that the methods used were acceptable and workable for the main study.

Chapter 4 – Recruitment, response rate and characteristics of the sample

This chapter reports the recruitment and response rates of pharmacies and patients. It also involves a description of the characteristics of the participating pharmacies, the SA and ME patients participating in the interview, and the SA and ME patients who did not take part in the interview. Finally, it describes the challenges in the recruitment and data collection process. This chapter highlighted that, in order to facilitate recruitment of community pharmacies, in-person visits should be made to non-responding pharmacies. The present study also showed that SA and ME patients were willing to take part, unlike what had been reported by some of the previous studies. An approach to the patient in-person by a healthcare professional (HCP) whom the patient knows and/or by a researcher who speaks the same language might increase the response rate. This chapter also outlined that there is a need to address the challenges encountered during recruitment and data collection process when recruiting patients from the same origins.

Chapter 5 – A description of the MRPs and the reasons that may contribute to MRPs and appeared to be similar to the general population from patients’ perspectives

Chapter 5 reports the number and types of MRPs that were identified during the current study. It also describes the reasons that may contribute to MRPs from patients’ perspectives and appeared to be similar to the general population, along with direct quotes from participants’ interviews. The main finding of this chapter is that many problems that were identified in SA and ME groups were similar to the general population. All the MRPs identified may affect the safe use of medicines and medication adherence if not addressed. All the MRPs could be detected and prevented in the community by communicating with the patients, providing expanded services and reviewing patients’ records in the pharmacy. An independent decision-making process was followed by many participants in the
current study regardless of the medical advice. This resulted in participants empowering themselves not to take their medicines as prescribed. Thus, strategies for informing and empowering patients in treatment decision-making should be high on the policy agenda. There is also a need to implement changes at the primary care level, with the aim of improving the equity of access to primary care services for SA and ME patients.

Chapter 6 – Contributory factors to MRPs that may be specific to SA and ME cultures

Chapter 6 describes the reasons that may contribute to MRPs and were reported to be specific to SA and ME cultures, along with direct quotes from participants’ interviews. Interviews revealed that many factors may contribute to MRPs. Some factors appeared to be specific to SA and ME cultures which included religious practices and beliefs; extent of family support; and travelling abroad back – to their homeland or to take religious journeys. Perceptions of healthcare providers, difficulty consulting a doctor from the same gender, lack of referrals to specialised care, language and communication barriers, lack of translated resources, illiteracy, lack of involvement in the treatment decisions, lack of knowledge and understanding (e.g., problems with source, delivery, type and timing of information) may also contribute to the problems. Thus, HCPs should support patients by talking to them more openly and providing tailored advice and education in relation to their specific needs and wants to enable them to manage their medicines effectively.

Chapter 7 – Comparing South Asian and Middle Eastern participants

Chapter 7 describes the differences between SA and ME participants in terms of response rate, demographic details, medication-taking behaviour, and pharmacy and health service issues experienced by these two populations. Poor participation was detected among SA women. Looking at the demographic details, some differences were found between SA and ME groups in terms of age, religion, main language and year of coming to the UK. The principal distinctions in terms of medicine use and service access between the two groups were found in the following: the extent to which participants reported consulting a pharmacist, the absence of a pharmacist who speaks the same language among ME respondents, the use of multiple pharmacies, access to GPs and other services, the extent of family support/help with medicines, and medication-taking behaviour. This chapter has shown that each ethnic group might have its own distinct characteristics, problems and needs. Therefore, care and treatment for all needs to be culturally sensitive and delivered according to each individual’s wishes.
Chapter 8 – The adaptations made to the original MRPs questionnaire and coding frame for the use of SA and ME groups

Chapter 8 provides a brief overview of the original MRPs questionnaire constructed and validated by Gordon. This chapter also illustrates our findings in relation to each part of the tool in order to identify what additional issues were discovered among SA and ME groups which would not be captured by the original MRPs questionnaire. The purpose of this was to make recommendations for the tool to be valuable for the use in these populations and to offer recommendations for the coding frame. In summary, Gordon’s MRPs tool was adapted by the researcher with minor modifications mainly to capture the experiences and views of SA and ME patients regarding use of medicine and access to services and to address reasons that may lead to MRPs which are specific to these groups. The principal changes were in describing the extent of support provided to patients by their families (section 1), adding additional patients’ characteristics (section 2), providing additional prompts to capture the reasons for intentional non-compliance that are important to SA and ME groups (section 3), presenting additional prompts to capture the problems that are likely to face ME and SA groups in accessing healthcare services (section 5), describing patients’ perception of pharmacists’ role, pharmacy services and MUR service (section 5), and, finally, asking for recommendations or advice from patients in order to provide care that is better tailored to their needs. The revised version of this tool could be used as an instrument in the MUR for these patients to detect MRPs. In terms of recommendation for the coding frame, no changes should be made to the original coding frame apart from adding 11 new sub-categories that were identified in the current study. It is also recommended to review patients’ records in GP surgeries and pharmacies and to conduct home interviews in order to be able to identify a wide range of MRPs that are included in the coding frame.

Chapter 9 – The perspectives of pharmacists on MRPs identified and recommendations made by the researcher

Chapter 9 examines the perspectives of pharmacists on the MRPs identified and recommendations made to address medicine-related problems among SA and ME groups. The main purpose of this chapter was to validate the MRPs identified in the current study and to test the recommendations made. This chapter provides a theoretical framework for MRPs from pharmacists’ perspectives. It also supports developing MUR further and adding the specific issues that were reported by SA and ME groups to support these groups in their use of medicines. The findings also support the development of pharmaceutical care plans specific for SA and ME groups. The interviews with the pharmacists confirmed the presence of specific issues among SA and ME groups and highlighted the need to implement changes at primary care and community level, with the aim of addressing MRPs among SA and ME patient and supporting their needs and preferences such as prioritising medication use review to SA and ME groups, increasing patient education and
counselling, providing verbal and written information in patients’ preferred language and according to their needs and wants, and raising awareness of SA and ME cultures among HCPs.

**Chapter 10 – 8-item Modified Morisky Adherence Scale (MMAS)**

Chapter 10 assesses the extent of non-adherence among SA and ME patients using the 8-item MMAS. This chapter provided evidence that SA and ME patients (53/79, 67%) had poor medication adherence using the 8-item MMAS. In the current study, the MRPs tool as well as the 8-item MMAS was used for the assessment of adherence to medications. Comparison of data from both methods revealed that what one method suggested was sometimes similar or different to or even conflicting with the other. Even sometimes when the two methods agreed, the participants appeared to have different incidents in mind when reporting their non-adherence behaviour using these different methods. This implies that the usefulness of each method for the assessment of non-adherence to medications is limited when used solely. It is therefore recommended that data from one method should be assessed with reference to the other. What is missing from one method can be completed by the other.

**Chapter 11 – Discussion**

Chapter 11 discusses separately: (1) the main key findings on what is new; (2) personal reflections about the research; (3) strengths and limitations of the study; (4) implications of the results for practice and policy; (5) suggestions for future work; and (6) research contributions (i.e., how this thesis has contributed to the knowledge and understanding of MRPs among SA and ME patients).

**Chapter 12 – Conclusion**

Chapter 12 summarises and brings together the main areas covered in this thesis and also makes some recommendations.
### List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>A&amp;E</td>
<td>Accident and emergency</td>
</tr>
<tr>
<td>ADE</td>
<td>Adverse drug event</td>
</tr>
<tr>
<td>AE</td>
<td>Adverse event</td>
</tr>
<tr>
<td>ADRs</td>
<td>Adverse drug reaction</td>
</tr>
<tr>
<td>A.M.</td>
<td>Morning or before noon</td>
</tr>
<tr>
<td>ASHP</td>
<td>American Society of Health System Pharmacists</td>
</tr>
<tr>
<td>BME</td>
<td>Black and minority ethnic</td>
</tr>
<tr>
<td>BMQ</td>
<td>Brief medication questionnaire</td>
</tr>
<tr>
<td>BNF</td>
<td>British national formulary</td>
</tr>
<tr>
<td>BP</td>
<td>Blood pressure</td>
</tr>
<tr>
<td>CCG</td>
<td>Clinical Commissioning group</td>
</tr>
<tr>
<td>CNS</td>
<td>Central nervous system</td>
</tr>
<tr>
<td>CP</td>
<td>Community pharmacy</td>
</tr>
<tr>
<td>CVD</td>
<td>Cardiovascular disease</td>
</tr>
<tr>
<td>DI</td>
<td>Drug interaction</td>
</tr>
<tr>
<td>DH</td>
<td>Department of health</td>
</tr>
<tr>
<td>DRP</td>
<td>Drug-related problem</td>
</tr>
<tr>
<td>DTP</td>
<td>Drug-therapy problem</td>
</tr>
<tr>
<td>EHC</td>
<td>Emergency hormonal contraception</td>
</tr>
<tr>
<td>EMG</td>
<td>Ethnic minority group</td>
</tr>
<tr>
<td>EQ-5D-3L</td>
<td>EuroQol 5-dimension-3likert questionnaire</td>
</tr>
<tr>
<td>EQ VAS</td>
<td>EuroQol visual analogue scale</td>
</tr>
<tr>
<td>GLA</td>
<td>Greater London Authority</td>
</tr>
<tr>
<td>GP</td>
<td>General practitioner</td>
</tr>
<tr>
<td>HCP</td>
<td>Healthcare professional</td>
</tr>
<tr>
<td>HRQOL</td>
<td>Health related quality of life</td>
</tr>
<tr>
<td>HUI2</td>
<td>Health utilities index mark 2</td>
</tr>
<tr>
<td>HUI3</td>
<td>Health utilities index mark 3</td>
</tr>
<tr>
<td>IMD</td>
<td>Index of multiple deprivations</td>
</tr>
<tr>
<td>IP</td>
<td>Inappropriate prescribing</td>
</tr>
<tr>
<td>IPA</td>
<td>International pharmaceutical abstract</td>
</tr>
<tr>
<td>IQR</td>
<td>Inter-quartile range</td>
</tr>
<tr>
<td>LCT</td>
<td>Long term condition</td>
</tr>
<tr>
<td>LSOA</td>
<td>Lower super output area</td>
</tr>
<tr>
<td>MARS</td>
<td>Medication adherence report scale</td>
</tr>
<tr>
<td>MDI</td>
<td>Metered dose inhaler</td>
</tr>
<tr>
<td>ME</td>
<td>Medication error</td>
</tr>
<tr>
<td>ME</td>
<td>Middle Eastern</td>
</tr>
<tr>
<td>MMAS</td>
<td>Mroisky medication adherence scale</td>
</tr>
<tr>
<td>MOT</td>
<td>Meeting our target</td>
</tr>
<tr>
<td>MRP</td>
<td>Medicine-related problem</td>
</tr>
<tr>
<td>MTP</td>
<td>Medicine-therapy problem</td>
</tr>
<tr>
<td>MUR</td>
<td>Medicine Use review</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Definition</td>
</tr>
<tr>
<td>--------------</td>
<td>------------</td>
</tr>
<tr>
<td>NCCSDO</td>
<td>National Coordinating Centre for Service Delivery and Organisation</td>
</tr>
<tr>
<td>NHS</td>
<td>National Health Service</td>
</tr>
<tr>
<td>NICE</td>
<td>National Institute for Health and Care Excellence</td>
</tr>
<tr>
<td>NMS</td>
<td>New medicine service</td>
</tr>
<tr>
<td>ONS</td>
<td>Office for National Statistic</td>
</tr>
<tr>
<td>OTC</td>
<td>Over the counter</td>
</tr>
<tr>
<td>PCNE</td>
<td>Pharmaceutical Care Network Europe</td>
</tr>
<tr>
<td>PCT</td>
<td>Primary care trust</td>
</tr>
<tr>
<td>PGD</td>
<td>Patient group direction</td>
</tr>
<tr>
<td>PDRA</td>
<td>Preventable drug-related admission</td>
</tr>
<tr>
<td>PHARMS</td>
<td>Pharmacies</td>
</tr>
<tr>
<td>PIL</td>
<td>Patient information leaflet or package insert leaflet</td>
</tr>
<tr>
<td>PIS</td>
<td>Patient Information Sheet</td>
</tr>
<tr>
<td>P.M.</td>
<td>After noon</td>
</tr>
<tr>
<td>PMR</td>
<td>Patient Medication Record</td>
</tr>
<tr>
<td>POM</td>
<td>Prescription only medicine</td>
</tr>
<tr>
<td>PRN</td>
<td>When necessary</td>
</tr>
<tr>
<td>QWB</td>
<td>Quality of Well-Being Scale</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Research and development</td>
</tr>
<tr>
<td>REC</td>
<td>research ethics committee</td>
</tr>
<tr>
<td>SA</td>
<td>South Asian</td>
</tr>
<tr>
<td>SD</td>
<td>Standard deviation</td>
</tr>
<tr>
<td>SF-6D</td>
<td>Short form 6 dimension</td>
</tr>
<tr>
<td>SE</td>
<td>Side effect</td>
</tr>
<tr>
<td>SEAMS</td>
<td>Self-efficacy for appropriate medication use scale</td>
</tr>
<tr>
<td>SHA</td>
<td>Strategic health authority</td>
</tr>
<tr>
<td>SPSS</td>
<td>Software package used for statistical analysis</td>
</tr>
<tr>
<td>SSI</td>
<td>Site specific information</td>
</tr>
<tr>
<td>SSRI</td>
<td>Selective serotonin re-uptake inhibitors or serotonin-specific reuptake inhibitor</td>
</tr>
<tr>
<td>UCL</td>
<td>University College London</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organisation</td>
</tr>
</tbody>
</table>
Chapter 1  Introduction and background

1.1  Chronic diseases

Chronic diseases are also known as long-term conditions (LTCs) and life-long diseases/conditions (WAG/NPHS, 2006). Although chronic disease has been defined by many sources, there is no widely agreed definition. Chronic diseases are defined as “diseases of long duration and generally slow progression” (WHO, 2005) or as “diseases which current medical interventions can only control not cure by medication and other therapies. The life of a person with a chronic condition is forever altered and there is no return to normal” (DoH, 2004; DoH, 2008). According to Cheever et al. (2009) chronic diseases have been defined as “medical or health problems with associated symptoms or disabilities that require long term management of three months or longer.” (Cheever et al., 2009). In this study the definition of Cheever et al. has been employed because in it they recognised that patients with LTCs require “long term management” which may involve using a complex and wide range of medicines to manage these conditions and frequently may lead to medicine-related problems (MRPs).

Long-term conditions include cardiovascular diseases (CVD) – mainly heart diseases and stroke – cancer, chronic respiratory diseases and diabetes (WHO, 2005; DoH, 2008). There are many other chronic conditions and diseases that contribute significantly to the burden of disease on individuals, families, societies and countries. Examples include mental disorders, chronic kidney diseases, bone and joint disorders and genetic disorders (WHO, 2005).

Across the globe, the burden of chronic diseases is increasing. The World Health Organisation (WHO) has estimated that 75% of the populations have at least one LTC (WHO, 2005). The number of people with chronic diseases is also rising in the UK. For example, there are around 15.4 million people (33.2%), or almost one in three of the population, with a LTC in England (DoH, 2008). In Wales, it was noted that 23% of adults reported having a LTC (WAG/NPHS, 2006). In Scotland, it was
indicated that, between 2005 and 2006, 23.6% of adults reported some form of LTC, health problems or disability (Scottish Government Social Research, 2007). These variations in prevalence of LTCs between England, Wales and Scotland are possibly due to several factors such as age of patients with LTCs, socio-economic status, lifestyle choices and rurality.

Both incidence and prevalence of chronic diseases are expected to increase in the UK (DoH, 2008). One of the main reasons for this is that the population of the UK is ageing and as people get older they are more likely to develop one or more LTC. For instance, the number of people in England with a LTC is set to increase by 23% over the next 25 years due to the ageing population (DoH, 2008). However, not all people with LTCs are elderly; for example some adults will have lived with a LTC from birth or childhood or may have acquired a LTC in adulthood. Others may have developed or exacerbated a LTC as a result of lifestyle factors which can contribute to the increase of LTC, such as unhealthy diet, excessive energy intake, physical inactivity, alcohol consumption and tobacco smoking (WHO, 2005).

LTCs are now the most common cause of mortality and disability in the world (WHO, 2005). It is estimated that 85% of deaths in the UK are from chronic diseases. Within this, 36% of all deaths will be from cardiovascular disease and 7% from chronic respiratory disease (DoH, 2008). The World Health Organisation has identified that such conditions will be the leading cause of disability by 2020 (WHO, 2005) and that, if not successfully managed, they will become the most expensive problem for healthcare systems (DoH, 2008).

Living with a LTC has a significant impact on a person’s quality of life, independence and economic wellbeing. It is reported that patients with LTCs are very intensive users of healthcare services. For example, those with LTCs account for 31% of the population but use 52% of all GP appointments and 65% of all outpatient appointments (DoH, 2008). It is also estimated that the treatment and care of those with LTCs accounts for 69% of all primary and acute care budgets in England (DoH, 2008). The majority of patients who have one or more LTC account for 49% of all in-
Chapter 1 – Introduction and background

patient hospital bed days (DoH, 2008). The UK economy stands to lose £16 billion over the next 10 years through premature deaths due to heart disease, stroke and diabetes (DoH, 2008). Total long-term care expenditure in general is forecast to increase by 103% to £26.4 billion (DoH, 2008).

In addition to the negative impact on individual sufferers, families and carers of patients with LTCs are also affected indirectly through additional care responsibilities undertaken (Francis et al., 2002). Tackling chronic disease is therefore a critical challenge in healthcare and there is a huge benefit to the population and financial savings if health and social care communities try to find the best ways to help people manage their chronic diseases effectively, for which effective management depends on the appropriate use of medicines.

The impacts of chronic diseases can be significantly reduced through chronic disease prevention and management efforts (Bromeling et al., 2005; Bromeling et al., 2008). While, in the past, many chronic disease prevention strategies have focused on interventions aimed at modifying individual lifestyle and behavioural risk factors associated with increased risk of chronic disease (e.g., smoking, diet, and physical activity), there is growing evidence that such approaches will have limited success. Research shows that community- and systems-level approaches that target the social, economic, and environmental root causes of poor health can be more effective at preventing chronic disease and can greatly improve the overall health of the population (Bromeling et al., 2008; Marmot, 2010).

Chronic diseases and disability are increasing throughout the world and affect people of all ethnicities (WHO, 2005; Jack et al., 2006). However, differences in prevalence rates of chronic diseases among various ethnic groups have been identified which indicate the presence of health inequalities within the society. Therefore, the next section will introduce the reader to the definition, prevalence and illness profile of ethnic minority groups and the experience of health inequalities among these groups in the UK.
1.2 Ethnic Minority Groups (EMGs) and health inequalities

The concept ‘ethnic minority’ refers to many different ethnic groups of extreme heterogeneity. The concept is used for groups that share minority status in their country of residence due to ethnicity, place of birth, language, religion, citizenship and other (cultural) differences. It sets apart a particular group in both numerical and (often) socioeconomical terms. Members of these groups are considered to practise different cultural norms and values from the majority culture and (often) have a different mother tongue. Ethnic minorities vary in duration of stay and acculturation, and between different ethnic minorities there exist different degrees of access to the majority culture. The concept of ethnic minority includes groups from newly arrived immigrants to (minority) groups that have been a part of a country’s history for hundreds of years (Blais and Mai’ga, 1999; Scheppers et al., 2006). Four ways have been used to establish ethnicity in the UK. Firstly, parental or preferably grandparental origin. Secondly, self-identity (i.e., permitting people to assess their own identity, which is in keeping with the patient-centred approach of the UK). Thirdly, appearance, which has poor reproducibility and does not serve a scientific role (Oldroyd et al., 2005). Finally, visual inspection of forename and surname, which has been used in several published studies (Nicoll et al., 1986; Rashid and Jagger, 1992; Martineau and White, 1998; Jessa and Hampshire, 1999; Platt and Tann, 1999; Chan, 2000; Nanchahal et al., 2001; Bouwhuis and Moll, 2003; Fiscella and Fremont, 2006).

The ethnic minority population in the UK grew rapidly in the post-World War II era. In 1951, the population numbered 80,000, growing to 500,000 in 1961, 1.5 million in 1971 and increasing further to 2.2 million in 1981 (McGarrigle, 2010). A large amount of primary migration occurred between 1948 and 1974. Since then, most growth in this population has been possibly due to natural increase, as over half of the Caribbean and Pakistani population in Britain are UK-born (McGarrigle, 2010). By 1991, the census recorded the minority ethnic population as numbering 3.1 million or 5.5% of the total population, growing to 4.6 million or 7.9% of the total
population in 2001, and to 8.2 million or 13% of the total population in 2011 (ONS, 2004; McGarrigle, 2010; ONS, 2011).

The ethnic composition of the UK, based on 2011 census data, was more varied than ever before. There had been a dramatic increase in ethnic diversity in all regions (ONS, 2011). The 2011 census in England revealed the largest ethnic minority group (EMG) to be Asian or Asian British (6.9%) including Indian (2.3%), Pakistani (1.9%), Other Asian (1.4%), Bangladeshi (0.7%) and finally Chinese (0.7%). This is followed by Black or Black British (3%), Mixed Ethnicity (2%), Other Ethnic Group (0.9%) and finally White Irish (0.1%) (ONS, 2011). In general terms, the possible reason for the increasing proportion of ethnic minorities in the UK could be due to continued immigration and high birth rate in some ethnic groups (Memon et al., 2002) and possibly because some people may have been missed from the 2001 estimates.

The National Health Service (NHS) in the UK is facing challenges of demographic changes, technological advances, new diseases and increased consumer expectation and sophistication (Rawaf and Bahl, 1998). These mean increasing demands on health services, rising costs and considerable organisational changes to meet these challenges and demands. Thus, health authorities have to develop strategies for improving the health of their local population by understanding realistic needs assessments. The White Paper relating to the NHS highlights new responsibilities and roles for health authorities, trusts and primary care groups (Secretary of State for Health, 1997). Our healthier nation, the Green Paper, describes action by the government in partnership with local organisations to improve people’s living conditions and health (Secretary of State for Health, 1998). It puts forward specific targets for tackling some of the major killer diseases and proposals for local actions.

The government’s public health agenda is set to tackle causes of illness and reduce inequalities in health (Rawaf and Bahl, 1998). The key determinants in health (e.g., education, income, employment, geographic region, housing, social exclusion,
pollution, minority status, age and gender) are important issues when talking about the health of EMGs (Marmot, 2010). Health inequities refer to the differences in health status among population groups that are deemed to be unfair, unjust, or preventable, as well as socially produced and systematic in their distribution across the population (Marmot, 2007). Inequality in health is based on complex social, cultural, and economic processes.

The inequalities among the three million people (6% of the total population) in ethnic minority groups are very striking. Examples of these are the high proportion of manual classes in Pakistani and Bangladeshi populations in comparison with the White population. Unemployment is highest in Bangladeshi men, with 1 in 3 unemployed. Unemployment in young adults of all EMGs exceeds that in Whites. There are marked ethnic differences in housing tenure. Over a third of Black and Bangladeshi households reside in accommodation rented from the local authority. Variations in housing conditions show dramatic differences between EMGs. Whilst 2% of White households are overcrowded, 47% of Bangladeshi and 29% of Pakistani households are overcrowded (Rawaf and Bahl, 1998). It is estimated that the additional NHS healthcare costs associated with health inequalities are in excess of £5.5 billion a year (Marmot, 2010).

EMGs often concentrate in the inner city and are clustered in particular areas. In some inner city areas EMGs comprise the majority of the population. The 2001 Census found that nearly half (48%) of the total minority ethnic population lived in the London region, where they constituted 29% of all residents (ONS, 2004). By 2031, 39% of London’s population is projected to be from an ethnic minority group (GLA, 2010). This compares with 32% in 2006 and 29% in 2001 (GLA, 2010).

It is important to understand the diversity among EMGs. They are not one homogenous group. Each group has its own distinct characteristics and health status. Almost all ethnic minority populations have a younger age structure than the White group. However, the Pakistani and Bangladeshi groups have a much younger age profile than other EMGs. The variations in health status and disease patterns
among EMGs are very marked in some areas and are distinctly different from that of the general UK population. For instance (Rawaf and Bahl, 1998):

- Death rates from coronary heart disease among Asians aged under 65 years are more than 50% higher than the England and Wales average.
- The death rate from stroke among those aged 65 years who were born in the Caribbean is nearly twice as great as the England and Wales rate.
- Perinatal mortality among Pakistani-born mothers is nearly twice the UK national average.
- Sickle cell disease occurs most commonly in the African and African-Caribbean populations.
- Diagnosis of schizophrenia may be 3-6 times higher among African-Caribbean groups than in the general population.
- Rates of uptake of cervical screening among Bangladeshi women are less than half of those among the general population.
- South Asians, in general terms, have a higher prevalence of chronic diseases including diabetes and cardiovascular disease (CVD) (Raleigh, 1997; Memon et al., 2002; Memon et al., 2003; Yusuf t al., 2004; NHS Health and Social Care Information Centre, 2005; Bhopal, 2007; Jayawardena et al., 2012) than the general population. They also have higher mortality and morbidity from such diseases than average (Raleigh, 1997; Memon et al., 2003), shorter life expectancies (Lee, 1998), and poorer health outcomes from these conditions than the majority of the population (Memon et al., 2003; Bhopal, 2007).

It is well documented that EMGs find it difficult to access healthcare services (Scheppers et al., 2006). Services provided are often not appropriate and language and cultural barriers prevent a useful dialogue between patients and healthcare professionals (HCPs), often leading to EMGs not receiving health advice or not having an understanding of NHS procedures (Rawaf and Bahl, 1998; Scheppers et al., 2006; Mead et al., 2009; Kontopantelis et al., 2010).

People from many ethnic minority groups tend to perceive themselves as less healthy than those in the general UK population. In particular, those of South Asian origin reported ‘bad’ or ‘very bad’ health when they were asked to self-assess their current health status on a five-point scale (e.g., 15% of Bangladeshi men and 10% of Pakistani men) (NHS Health and Social Care Information Centre, 2005). The lowest prevalence of bad/very bad health was among Black African and Chinese men (4%).
As regards women, 14% of Bangladeshi and 15% of Pakistani women reported bad/very bad health. As with men, the lowest prevalence was among Chinese women (3%) (NHS Health and Social Care Information Centre, 2005). These responses suggested that, with respect to the perception of their own general health, people from minority ethnic groups considered their health to be worse than did the general UK population. This is possibly because some ethnic groups may be receiving lower standards of care in terms of poor access (Kontopantelis et al., 2010), lower uptake of screening (Naish et al., 1994), less use of antenatal services (Chan, 2000) and poor standards of communication when care is accessed (Chan, 2000; Mead et al., 2009), particularly when a consultation is conducted in a language other than their own (Roberts et al., 1996).

With this background, health needs assessment must be comprehensive and take into consideration the determinants of health. The new NHS White Paper assigns clear roles to health authorities, primary care groups, NHS trusts, local authorities and the public in the health improvement programme (Secretary of State for Health, 1997). Some of the key areas that health authorities have undertaken include (Secretary of State for Health, 1997):

- Assessing the health needs of the local population and implementing strategies for meeting those needs, in the form of a health improvement programme developed in partnership with all the local interests and ensuring delivery of the NHS contribution to it.
- Increasing understanding among HCPs of the health and disease patterns of the EMGs.
- Provision of appropriate information on health and health services for EMGs to increase their understanding of the health and disease patterns within their communities; they need to understand the action needed to prevent morbidity and mortality.
- Use of ethnic minority media locally and nationally to promote health messages.
- Development of alliances with local authorities, the voluntary sector and public agencies; key players will be individuals and organisations working closely with the EMGs.
Ethnic minority health should be part of mainstream service delivery. Commissioner development is an ideal mechanism for achieving this. Commissioners and providers can draw upon a number of Departments of Health initiatives, and HCPs and managers must (Rawaf and Bahl, 1998):

- Involve stakeholders.
- Improve available information.
- Consult communities in-depth and more widely.
- Set local targets and quality standards for ethnic minority health.
- Build ethnic minority health into the mainstream of the organisational process of commissioning and provide programmes to take account of the needs of the EMGs.
- Learn lessons from regular reviews of progress.

The last Labour government commissioned Professor Sir Michael Marmot to undertake a strategic review of health inequalities in England post-2010. Its goal was to identify the evidence on health inequalities – including on putting evidence into practice – and to advise on possible measures to reduce health inequalities in the short, medium and long term (to 2020 and beyond) (Marmot, 2010). The review concluded that the fundamental drivers of inequalities in health are “inequalities in power, money, and resources”. The Marmot review recommended that one of the priority policy objectives should be to “improve community capital and reduce social isolation across the gradient”, noting that the “extent of people’s participation in their communities and the added control over their lives that brings, has the potential to contribute to their psychological well-being and, as a result, to other health outcomes”. The review concluded by setting out an implementation framework to achieve reductions in health inequities along the social gradient, stating that “Without citizen participation and community engagement fostered by public service organisations, it will be difficult to improve penetration of interventions and to impact on the health inequalities.” (Marmot, 2010).

The UK Coalition government’s public health White Paper has indicated its support for the recommendations of the Marmot Review and most of them are reflected in its strategy for public health, healthy lives, and healthy people (Secretary of State
This support is embedded in localism and the need to build local solutions through effective working between public health, the NHS, the wider public sector and civil society, supported by the advice and expertise of Public Health England and the local public health system. The drive to reduce health inequalities will be central to everything they do.

Since the 1st April 2013, the NHS has been undergoing major changes in its core structure (NHS, 2013). The biggest changes have had an effect on who makes decisions about NHS services, how these services are commissioned, and the way money is spent. Some organisations such as primary care trusts (PCTs) and strategic health authorities (SHAs) were abolished, and other new organisations such as clinical commissioning groups (CCGs) were created. However, none of these changes will affect how patients access NHS services in England. These changes were made because ministers believe that GPs will be more responsive to the needs of patients as they have day-to-day contact with them; as a result, this will make the NHS more efficient and improve the quality of care.

Management of chronic diseases and tackling health inequalities can be affected by medicine use- and service access- issues, which are referred in this thesis as medicine-related problems. Therefore, the next section will define MRPs, identify types of MRPs, and present contributory factors that may lead to problems and ways to solve and prevent MRPs.

### 1.3 Medicine-related problems (MRPs)

Drug treatment can effectively improve quality of life, prevent or alleviate symptoms, cure disease and finally arrest or slow a disease process. However, drugs are powerful and must be handled appropriately. In reality, this does not occur because medicines are often prescribed, dispensed or sold inappropriately (Lau et al., 2005; Laroche et al., 2007; Spinewine et al., 2007; WHO, 2010) or factors prevent patients from taking their medicines correctly or as prescribed (Smith, 2000, WHO, 2010). It has been shown that inappropriate use of the drugs may give
negative health outcomes, such as increase morbidity and mortality (Buajordel et al., 2001; Laroche et al., 2007; Mannheimer et al., 2006; Viktil et al., 2006), reduce quality of life (Ernst et al., 2003; Viktil et al., 2006), and increase health expenses for the patient and for society (Mannheimer et al., 2006; Viktil et al., 2006, WHO, 2010).

Inappropriate use of medicines may raise the risk of the occurrence of medicine-related problems (MRPs) (WHO, 2010). The following section will include different terminologies, definitions and classifications of medicine-related problems that have been reported in the literature.

1.3.1 Terminologies, definitions and classifications of MRPs

In 2004, Van Mil et al. provided a systematic review and critical appraisal of MRPs classifications for use during the pharmaceutical care process and research in pharmacy. Classifications were assessed according to a clear definition, published validation method, and results reflecting process and outcomes, usability in pharmaceutical care practice and a hierarchical structure (with main groups and subgroups). After searching the literature, Van Mil et al. found that there are 14 classifications of MRP. This section will only discuss eight classification systems identified by Van Mil et al.’s article (Strand et al., 1990; Hanlon et al., 1992; ASHP, 1996; Kraska, et al., 2002; Granada Consensus II, 2002; Westerlund, 2002; NCC-MERP Taxonomy, 2003; PCNE, 2010); and two systems identified by a hand search were not included in Van Mil et al.’s article because they were published after 2004 (Gordon et al., 2005; AbuRuz et al., 2006). An overview of MRPs classification systems is summarised in Appendix 1.

Although it seems that the term drug-related problem (DRP) is the most widely used term in the literature (Strand et al., 1990; Hanlon et al., 1992; Westerlund, 2002; Gordon et al., 2005; PCNE, 2010), different researchers give different terminologies for problems in pharmacotherapy such as medicine-related problems (MRP) (ASHP, 1996), drug-therapy problems (DTP) (Strand et al., 1990; Granada
Consensus II, 2002), medicine-therapy problems (MTP) (ASHP, 1996), medication errors (ME) (NCC-MERP Taxonomy, 2003), pharmaceutical care issues (Krska, et al., 2002), and treatment-related problems (AbuRuz et al., 2006).

MRP, DRP, DTP or MTP are terms that can be used to describe a situation where a drug results in consequences other than those intended. These terms can also describe a problem that may not lead to unintended consequences, such as an increased risk of potential problems. ME is mainly used in the world of health maintenance organisations and hospital pharmacy. However, this term concentrates more on the healthcare professionals (e.g., physician or nurse) as the person causing a problem. It also implies that kind of error can be avoided. The term ‘pharmaceutical care issue’ describes potential and actual types of MRPs, and identifies causes of MRPs and interventions that should be employed to solve actual and prevent potential MRPs. AbuRuz et al. (2006) argued that the term treatment–related problems should replace the other terms that describe DRPs. This is because they believed that the term DRP limits the scope of pharmaceutical care to medicine-related care. For instance, untreated conditions (e.g., hypertensive or diabetic patients without education about drug therapy or without a prescription to treat the condition) are actually a treatment-related problem rather than a DRP.

Despite the fact that DRP and MRP terms can be used interchangeably, in this thesis the term MRPs will be used rather than DRPs, because in the UK the term ‘medicine’ is more preferred than the term ‘drug’ (Fernandez-Llimos et al., 2005), especially given that the word ‘drug’ may also refer to recreational drugs. In addition, both DRPs and MRPs refer more directly to the usually undesired outcome of drug therapy seen from the patient’s perspective, both actual and potential.

As became evident from this literature review, definitions for MRPs vary; for example, some used a clear definition to address MRPs (Strand et al., 1990; ASHP, 1996; Krska, et al., 2002; Granada Consensus II, 2002; Westerlund, 2002; NCC-MERP Taxonomy, 2003; Gordon et al., 2005; AbuRuz et al., 2006; PCNE, 2010), either a wide or a narrow definition; whereas others used no universally accepted definition.
Chapter 1 – Introduction and background

(Hanlon et al., 1992). The wide definitions of MRP that were employed aimed at capturing all sorts of problems as well as actual (i.e., when the patient taking the drug is exhibiting a known adverse event) and potential MRPs (i.e., where the patient is at increased risk of a known adverse event) (Strand et al., 1990; ASHP, 1996; Westerlund, 2002; Gordon et al., 2005; AbuRuz et al., 2006; PCNE, 2010). Conversely, the narrow definitions of MRP aimed at capturing a specific problem such as ME (NCC-MERP Taxonomy, 2003). Some definitions acknowledged the patient perspective as the central focus for identifying, resolving and preventing MRPs as well as healthcare professionals’ perspectives (Strand et al., 1990; ASHP, 1996; Westerlund, 2002; Gordon et al., 2005), whereas other definitions focused only on healthcare professionals’ perspectives for identifying, resolving and preventing MRPs (Hanlon et al., 1992; Granada Consensus II, 2002; Krska, et al., 2002; NCC-MERP Taxonomy, 2003; AbuRuz et al., 2006; PCNE, 2010).

It is believed that, when a broad definition is used, an increased number of MRPs can be identified. Thus, in this thesis a broad definition will be employed to address MRPs. The majority of MRPs classification systems that use a broad definition to address MRPs (ASHP, 1996; Westerlund, 2002; AbuRuz et al., 2006; PCNE, 2010) do not vary widely from the one originally introduced by Strand et al. (1990). In this thesis the definition of Gordon et al. (2005) will be used because it includes all aspects of MRPs and focuses on patients’ experience and perspective, which are very important in order to support the entire population in the use of medicines.

All MRPs classification systems categorise the type of MRPs identified but very few have a hierarchical structure that separates problems from causes and interventions (AbuRuz et al., 2006; PCNE, 2010). Only four classifications have been validated (Westerlund, 2002; Gordon et al., 2005; AbuRuz et al., 2006; PCNE, 2010). However, all the classification systems were tested as to their usability in practice.

In general terms, several MRPs classification systems have been identified from the literature but a lack of agreement concerning terminologies, definitions and classifications of MRPs has been noticed. This can probably be explained by the fact
that the activity of counselling patients is a new one for pharmacists. Consequently, many pharmacists are working to find the best practice and to create tools that support their way of practising. In addition, terminology, definition and classification system of MRPs used depends usually on the focus of the inquiry. As a result, a variety of different definitions, classifications, practices and tools emerge. However, it is generally agreed that a comprehensive, well-conducted and validated instrument is currently lacking (Van Mil et al., 2004; AbuRuz et al., 2006).

From our perspective, a good classification system: (1) should have a clear definition of the MRPs; (2) it should also be validated and usable in practice; (3) it should be structured in a hierarchical way, clearly separate cause from problems and preferably also have an intervention section. The only three classifications that meet the first two criteria are PCNE, Gordon, AbuRuz systems. Although Gordon et al.’s system has no hierarchical structure, it will be employed as a guide to classify MRPs in this thesis. This is because this system includes all aspects of MRPs and focuses on both patients’ and healthcare professionals’ perspectives. In addition, this system does not only address medicine-related problems but also service-related problems that many ethnic minority patients are experiencing. Moreover, the Gordon system is usable in practice and was tested among people from Black (Gordon et al., 2007) and South Asian origins (Sidi et al., 2009). Finally, PCNE and AbuRuz systems do not include patients’ opinions or perceptions in the classification process because they believed that patients’ therapy expectations and goals are the same as the professionals’, which may not be true for all patients.

The literature search methodology for the Van Mil review was clearly specified including source of data, study selection and data extraction. In addition, critical evaluation of the DRP’s classification systems was obtained. Moreover, classifications were adequately assessed according to a clear definition, published validation method, and results reflecting process and outcomes, usability in pharmaceutical care practice and a hierarchical structure. However, Van Mil had
reported difficulties in identifying previous literature on MRP from databases, so there is a high possibility that some MRPs systems have been missed.

The previous section has looked at the range of terminologies, definitions and classifications of MRPs. The following section will illustrate the possible causes of MRPs reported in the literature.

1.3.2 Potential causes of medicine-related problems

The most common potential causes of MRPs reported in the literature may include (Rupp et al., 1992; Aparasu et al., 2000; Sutcliffe et al., 2004; Chen et al., 2005; Curran and Bullock, 2005; Morgan and Figueoa-Muñoz., 2005; Laroche et al., 2007; Scheppers et al., 2006; Howard et al., 2008):

- Inappropriate prescribing.
- Altered medication-taking behaviours.
- Communication failure.
- Knowledge gaps.
- Inadequate monitoring and review.
- Difficulties in access and use of healthcare services.

Inappropriate prescribing (IP)

Prescription is the first stage in the medicines use process and prescribing errors are possibly the most serious of all types of medication errors. Unless a prescribing error is detected by another person involved in medicine use, such as the pharmacist dispensing the medicine or the nurse administering the medicine or the patient to whom the medicine was prescribed, incorrect medicines will be taken or given, with the risk of harm. Inappropriate prescribing (IP) is now considered a major public health issue, given its direct linkage to substantial morbidity, mortality and wastage of health resources (Spinewine et al., 2007) that result from adverse drug reactions (ADRs) (Aparasu et al., 2000; Laroche et al., 2006) and/or adverse events (AEs) (Viswanathan et al., 2005).

There are various published definitions of prescribing errors but one that allows us to understand how errors occur and how they can be prevented is that by Dean et
al. (2000) who define prescribing error as follows: “a clinically meaningful prescribing error occurs when, as a result of prescribing decision or prescription writing process that is an unintentional significant (1) reduction in probability of treatment being timely and effective or (2) increases the risk of harm when compared with generally accepted practice”.

Prescribing errors can either be as results of errors in decision-making or as a result of miscommunication during the prescription-writing process (Chen et al., 2005). Errors in decision-making can occur as a result of lack of knowledge about patients and their clinical status, or lack of knowledge of the drug being prescribed. Errors in the prescription-writing process can occur as a result of error of commission or error of omission. Errors of omission occur when information essential to filling the prescription was missing (e.g., drug, dose, or dosage form not specified on the prescription) (Rupp et al., 1992). Errors of commission consist of the prescriber incorrectly specifying the dosage regimen or strength of the prescription or the occurrence of therapeutic duplication (Rupp et al., 1992).

Some ethnic minority patients may experience language barriers. The inability to communicate in what is not the ethnic minorities’ mother tongue may lead to poor communication which prevents physicians’ attempts at obtaining vital medical history easily, which may result in medical risk (e.g., ADRs) and possibly inappropriate prescribing if a misunderstanding occurs with regard to obtaining medical history. Thus, there is a high possibility that prescribing errors may occur more frequently in ethnic minority groups. Because these errors are theoretically preventable, HCPs should focus on the error prevention strategies in order to propose systems of working that can be implemented by individual organisations to prevent future occurrences and to meet the needs of ethnic minority groups and improve the care of ethnic minority patients.
Altered medication-taking behaviours

Compliance, concordance and adherence

Compliance, concordance and adherence are the three most commonly used definition to describe medication-taking behaviours. The term ‘compliance’ was defined by Sackett and Haynes as “the extent to which a person’s behaviour (in terms of medication taking, following a diet, modifying habits, or attending clinics) coincides with medical or health advice” (Haynes et al., 1979; Sackett, 1976a). Compliance is probably the most used term in searching the literature. However, it has received much criticism due its negative connotations, as some argue it implies a lack of patient involvement in the process (Vermeire et al., 2001). Compliance implies that patients have a passive role in their healthcare and that they should ‘submit’ to their healthcare providers’ orders in taking their medications or following other treatment regimens (e.g., diet, exercise, weight loss, etc.). Failing to ‘comply’ is usually associated with blame, whether this blame is placed on doctors or patients (Vermeire et al., 2001). Therefore, terms like ‘adherence’ or ‘concordance’ are now more preferred.

The term ‘concordance’ is a UK-specific term which was introduced about a decade ago by the Royal Pharmaceutical Society of Great Britain. It focuses on the consultation process in which the doctor and patient agree on therapeutic decisions incorporating their respective views, and extends to involve supporting patients in medicine taking. It is argued that the term ‘concordance’ reflects the contemporary practice of medicine and healthcare provision, allowing greater responsibility for both doctors and patients to reach mutual agreement regarding therapeutic decisions (Royal Pharmaceutical Society of Great Britain, 1997). However, if agreement cannot be reached, the patients’ view should prevail.

Although the term has gained much appeal because it respects patients’ rights in deciding about taking their medications, it has been criticised for the moral and
ethical issues it raises. Horne and others in 2005 highlighted some of these criticisms as follows:

- Concordance has a limited scope, dealing with prescribing-related consultations but not medication-taking behaviour.
- Concordance implies that achieving concordance will improve adherence. However, this is an assumption that requires empirical evidence.
- Concordance may raise ethical issues in circumstances where the patient, knowingly or unknowingly, refuses a life-saving treatment, or chooses a treatment which could result in self-harm or harm of others. This could occur when patients misinterpret likely risks or benefits of treatment, or when they have created false beliefs based on erroneous information.
- Concordance does not address the balance between individual rights and responsibilities.

The term ‘adherence’ implies that the patient is free to decide whether to adhere to the doctor’s recommendations and that there is no reason to blame patients should they wish not to follow the treatment (Horne et al., 2005). Unlike the term ‘compliance’, ‘adherence’ is seen as more respectful of the role patients play in their own treatment plan. However, both terms, ‘compliance’ and ‘adherence’, were used interchangeably throughout this thesis.

**Extent of the problem of altered medication-taking behaviour**

A report commissioned by the NHS National Coordinating Centre for Service Delivery and Organization (NCCSDO) highlighted that reviews from different countries and across different disease conditions have consistently estimated that 30-50% of prescribed medication is not taken as instructed (Horne et al., 2005). The same report emphasised that: “There is no evidence that the problem of non-adherence has been solved by recent advances in the design and presentation of medicines or by the evolution of healthcare services that have tended to become more patient-centered”.

**Consequences of altered medication-taking behaviours**

Non-adherence is a major health issue resulting in missed opportunities for treatment effect, reducing health outcomes, and increasing mortality, morbidity
and healthcare costs due to relapse and complications (Hanlon et al., 2003; Gerber et al., 2010; Stavropoulou, 2011). For example, it has been estimated that poor adherence is responsible for an 80% increased risk of diabetes death and also responsible for 48% of asthma deaths, and an increased risk of death by 3.8-fold in the year following a heart attack (Elliot, 2009). According to the UK National Health Service (NHS), medicines are considered to be the biggest expenditure after staff and 71% of the medicine budget is spent in primary care. It is estimated that concurrent cost of unwanted or unused medicines exceeds £300 million annually (Trueman et al., 2010). Failure to take medicines as intended is therefore likely to result in relative therapeutic failure, disease progression, and the need for more aggressive treatments, which might further increase the risk of drug-induced problems. Unnecessary suffering, loss in productivity, and even premature death can also result from non-adherence to medications (Grymonpre et al., 1998). Avoidable medical expenses may also follow, due to hospitalizations and the waste of expensive medicines that are misused or unused (Royal Pharmaceutical Society of Great Britain, 1997).

**Barriers to appropriate medication-taking behaviours**

Numerous researchers have conducted systematic reviews to explore and evaluate the most common factors and reasons causing therapeutic non-compliance (Carter and David, 2005; Jin et al., 2008; Peeters et al., 2011; Marshall et al., 2012). These reviews were conducted in various medical conditions, and of patients from a wide range of countries. These factors were categorised as patient-centered factors, therapy-related factors, social and economic factors, healthcare system factors, and disease factors. For some of these factors, the impact on compliance was equivocal, but for other factors, the impact was contradictory and inconsistent. However, the included studies differed too much with respect to their study designs and the sample that was studied.

In these reviews, there were several methodological challenges with respect to measuring medication adherence, diversity of settings and study designs that made
it very difficult to compare results of the existing reviews. None of these reviews discussed the barriers to medication adherence which were reported to be specific to SA and ME populations. For instance, the influence of socio-cultural or religious factors on medication adherence is not well recognised in current clinical practice. The lack of knowledge concerning medication adherence among EMGs in Europe is surprising; very few studies were found on SA population and none were found on ME population (Ens et al., 2013).

A recent systematic review by Ens et al. (2013), which aimed at examining adherence to cardiac medication among South Asian patients, found that there was an absence of studies around adherence among SAs in the UK, a country which has a sizable South Asian population. In their review, thirteen papers were identified; most of the studies (n=10) were conducted in India and Pakistan. Migration from these countries has resulted in high proportions of South Asian individuals residing in countries around the world, such as the countries from which the remaining studies originated: Norway (n=1), Denmark (n=1) and Canada (n=1).

Medication side effects, symptomless conditions, cost, fasting, travelling to birth country or homeland, forgetfulness and higher frequency of dosing contributed to non-adherence. In addition, South Asian immigrants faced language and communication barriers, which contributed to non-adherence. Difficulties in accessing healthcare system and medication were also associated with poor adherence. Lack of knowledge regarding the medications prescribed was a factor that decreased adherence. Family support was associated with better adherence.

Another systematic review was conducted by Al-Qasem et al. in (2011) to establish the extent of non-adherence to medication regimens in Middle Eastern countries across different conditions and the reason for non-adherence. The review estimated that non-adherence rates among MEs ranged from 1.4-88%. The reported reasons for poor adherence were forgetfulness, side effects, concern about drug dependency, feeling well, medication was not helping them feel better, lack of education about illness and medicines, irregularity of follow-up, disbelief
about the value and need for medication, social stigma, complexity of drug regimen, cost problems, and inability to consult patients’ regular doctors (Al-Qasem et al., 2011).

The findings of these reviews should not be generalised because many of these studies were conducted outside the UK and some were carried out among different ethnic groups, so the views, behaviours or experiences that were revealed from these studies may not reflect other ethnic groups or countries because peoples’ views, behaviours or experiences may vary from country to country and what may be true to one ethnic group may not be necessarily so to another. In addition, a small number of participants were involved in some of these studies – ranging from 30 to 47 participants – which might not provide sufficient power to detect meaningful results. Finally, a number of the studies were carried out among first-generation ethnic migrants and views, behaviours or experiences may differ among second- or third-generation ethnic minorities.

These reviews have shown that there is a lack of studies examining adherence and reasons for poor adherence among SA and ME groups in the UK. There is some evidence to suggest that SAs are less likely than Caucasians to adhere to their medication regimen (Lai et al., 2011). There is also some evidence to indicate that non-adherence among ME group is considerably high (Al-Qasem, 2011). Thus, in our study we would like to measure rate of non-adherence among SA and ME groups and to know the reasons behind poor adherence in order to support patients and provide the appropriate recommendations that suit their beliefs and needs. This may be crucial to reducing the level of non-adherence in general, and to enhancing the possibility of achieving the desired healthcare outcomes.

**Communication failure**

Patients can be under the care of multiple healthcare professionals within different settings and at the same time. Any stage of the medicines management process can thus be carried out by different individuals including prescribers, patients and their
carer. For instance, medicines use reviews may not be done by the prescribers. A patient’s medication may be stopped by one prescriber and continued by another due to lack of information. For example, when patients are discharged from the hospital, drug regimens that were started and needed only in the hospital may be unnecessary continued by another prescriber, who is reluctant to communicate with the previous prescriber. Conversely, at admission to a healthcare facility, lack of communication may result in unintentional omission of a necessary maintenance drug.

MRPs can result from communication failure between members of the patient’s healthcare team, and between healthcare professionals and their patients/carers. Continuity of care by effective communication is vital to ensure intended treatment plans are implemented and monitored. Communication failures can be observed when patients are transferred between different healthcare settings such as admission to hospital or between different specialists/wards in the same hospital. Failures in communication between healthcare personnel can threaten patient safety. Recent evidence suggests that ineffective or insufficient communication among health-team members is often a contributing factor that leads to medical errors, adverse events and preventable drug-related admissions (e.g., medication errors) (Sutcliffe et al., 2004; Howard et al., 2008).

Sutcliffe et al. (2004) conducted a qualitative study (i.e., semi-structured, face-to-face interviews) to describe how faulty communication contributes to many medical mishaps. Resident doctors (n=26) reported a total of 70 mishap incidents that had occurred in hospital ranging from error in patients’ management (n=29), error of omission (n=26), error of diagnosis (n=24) and treatment (n=24) and error of comission (n=21). The aspects of ‘communication failure’ (n=30) and ‘practitioners’ knowledge gap’ (i.e., refers to the extent to which a practitioner’s medical knowledge is incomplete or inaccurate) (n=28) were the two most commonly cited contributing factors to medical mishap.
The findings of Sutcliffe et al.’s study are consistent with other research showing a strong link between poor communication, knowledge gap and preventable drug-related admissions (PDRAs) or medication errors (Howard et al., 2008). Howard et al. (2008) published results of a study exploring the causes of preventable drug-related admissions (PDRAs) to hospital using semi-structured interviews and medical records review. The study had sixty-two participants, consisting of 18 patients, eight informal carers, 17 general practitioners, 12 community pharmacists, three practice nurses and four other members of healthcare staff, involved in events leading up to the patients’ hospital admissions. It was found that PDRAs are associated with problems at multiple stages in the medication use process including prescribing, dispensing, administration, monitoring medication and patients seeking help for problems with medication. The main causes of these problems were communication failures (between patients and healthcare professionals and different groups of healthcare professionals) and knowledge gaps (about medications and patients’ medical and medication histories).

Insufficient patient counselling about medication was an important communication problem between patients and healthcare professionals reported by the authors in Howard et al.’s study. Many patients indicated that they were reluctant to question healthcare professionals, especially GPs, about their medication. Some community pharmacists assumed that patients would have received medication counselling from the GP or other healthcare professional when obtaining their prescription and so did not counsel patients themselves. Other community pharmacists did not perceive medication counselling to be their role. Some patients indicated that they could not recall information which they had been given, or had difficulty hearing the information healthcare professionals gave. These important issues relating to communication underpinned patients’ knowledge gaps about medication, resulting in active failures by patients and carers in appropriately administering medication, monitoring medication, and seeking help for problems with medication (such as how to take the medication or how to respond to potential adverse effects).
In this study communication failure between professional groups was also reported by the authors. Although some community pharmacists recognised that prescriptions were potentially harmful, they indicated reluctance to question GPs because they had insufficient information about patients’ medical and medication history and because of the length of time taken to contact GP and previous experiences when the problems were raised with the GP. This study also revealed that the limited or incomplete information on discharge letters and delay in sending outpatients letters may restrict GPs in managing medications safely that were started by hospital doctors.

Although Sutcliffe et al.’s and Howard et al.’s studies have similar conclusions, Howard et al.’s study may be considered to be of better quality than Sutcliffe et al.’s one because Howard et al.’s study considered the perspectives of patients and different healthcare professionals (i.e., GPs and community pharmacists) (total number=62) whereas Sutcliffe et al.’s evaluated only the views of resident doctors (n=26). In addition, Howard et al.’s study enhanced the validity of the collected data by triangulating the views of three key players in patients’ safety (i.e., GP, pharmacist and patient). Despite all the advantages of Howard et al.’s study, its findings should not be generalised because all the data were collected in the Nottingham area, which may not be representative of other primary care across the UK.

Knowledge gaps

Inadequate knowledge about patients’ medication and medical history among patients and healthcare professionals can lead to MRPs. Lack of access to patients’ medical history by community pharmacists may influence counselling provided with medicines supplied. Patients may also use more than one community pharmacy, disrupting the continuity of care provided. Healthcare professionals may be less knowledgeable about particular medicines and LTCs; thus contributing to inadequate monitoring for particular patients. On admission to hospital, lack of knowledge about recent changes in treatment can result in the re-initiation or
disruption of medication therapy if the patient is unable to contribute to the medication reconciliation process. After discharge from hospital, delays in sending outpatient letters and limited information in discharge letters mean that information is unavailable when needed and GPs have insufficient information to safely manage medication started by hospital doctors.

As mentioned earlier, Howard et al. (2008) suggested that the main causes of preventable drug-related hospital admissions were not only communication failures but also knowledge gaps. In this study it was found that difficulties in accessing complex medical and medication histories in electronic patient records were associated with gaps in GP knowledge. Information about important risk factors for adverse events was easily lost in long electronic records, which may influence patient’s safety. GPs in this study were not alerted to some high-risk prescriptions because computer systems did not link patient diagnoses and blood test results to prescribed medication. It was also revealed that there was a lack of access to patients’ medical and medication history for community pharmacists, which may influence patient safety and medication counseling, and, even when medication histories were available in some community pharmacies, some electronic computers systems did not provide alerts to potential interaction, which means that sufficient information is lacking.

GPs and community pharmacists sometimes had insufficient knowledge of the medication they prescribed, dispensed or monitored. Some professionals assumed that they knew enough to safely manage the medication without consulting reference sources. These findings were also supported by Sutcliffe et al.’s study (2004), which revealed that the practitioners’ knowledge gaps as well as communication failure were the two most commonly cited contributing factors to medical mishap.

Patients’ poor knowledge about illness and/or medicines has also been reported in the literature. In some studies, participants reported they had little or inaccurate knowledge about illness and/or medicines (Thompson and Stewart et al., 2001; Lip
et al., 2002; Kessels, 2003; Lip et al., 2004; Gordon et al., 2005; Gordon et al., 2007; Opara et al., 2010; Al-Qasem et al., 2011; Samman and Chaar, 2013; Ens et al., 2013). In other studies, participants reported that their doctors supplied them with insufficient information about illness and/or medicines (Thompson and Stewart et al., 2001; Gordon et al., 2005; Gordon et al., 2007; Jin et al., 2008; Kumar et al., 2013; Samman and Chaar, 2013), or even conflicting information (Gordon et al., 2005; Gordon et al., 2007). Moreover, a number of studies reported that patients often failed to recognise the seriousness of illness and importance of taking their medications and often underestimated these which may constitute a major barrier to their adherence to medication regimens (Dimatteo et al., 2000; Al-Qasem et al., 2011). The findings from various studies showed that knowledge of patients about their illnesses and/or medicines was far from optimal. Therefore, in order to support ethnic minority patients, who are expected to have communication failure and knowledge gap problems, in managing their medicines effectively and safely, these two potential causes should be considered in our study.

Inadequate monitoring and review

The goals of treatment monitoring and review are to ensure that the medicines are producing the intended effect, that they remain appropriate, and to detect any medicine-related problems. The extent of monitoring and review of medication therapy depends on the pharmacological profile of the medicine used, patient profile, severity and advancement of the LTC being treated. Healthcare professionals such as pharmacists, trained nurse and doctors are well placed to carry out monitoring and review of medication therapy. Monitoring drug use involves documenting the indication for a new drug; keeping a current list of drugs used by the patient in medical records; monitoring for achievement of the therapeutic goals and other responses to new drugs; monitoring necessary laboratory tests for efficacy or adverse effects; and periodically reviewing drugs for continued need. Lack of close monitoring especially after new drugs have been prescribed may increase risk of adverse effects and ineffectiveness. Criteria to
facilitate monitoring have been developed as a part of drug utilisation review criteria and they focus, for example, on inappropriate dosage or duration of therapy, duplication of therapy, and possible drug-drug interactions.

Sidi et al. (2009) and Opara et al. (2010) conducted face-to-face interviews in the United Kingdom to explore the South Asian community’s experiences of the MRPs they faced. The most common types of MRPs identified in these studies were information needs about medication, poor compliance and difficulty in remembering the names of their medication. These studies also found that patients of South Asian origin had a lack of regular monitoring and review, which may be a contributing factor for the lack of information they had about their medicines and the poor adherence which may consequently result in more MRPs. The results of these studies should be interpreted with caution because all the data were collected in the Bedfordshire area from South Asian patients, which may not be representative of other people from different ethnic backgrounds and different areas. In addition, the sample size of participants was too small to come to a clear conclusion (n=32 and 59) (Sidi et al., 2009; Opara et al., 2010). In order to support the needs of ethnic minority patients, who are expected to experience health inequalities, in managing their medicines effectively and appropriately, lack of regular monitoring and review factors should be taken into consideration in our study.

Difficulties in access and use of healthcare services

In the UK, as in other countries, the growth of various ethnic communities and linguistic groups, each with its own cultural traits and health profiles, presents a complex challenge to healthcare practitioners and policy makers in terms of achieving equitable access (Rashid and Rogger., 1992; Roberts et al., 1996; Chan, 2000; Morgan and Figueoa-Muñoz., 2005; Szczepura, 2005; Gordon et al., 2007). Pechansky and Thomas (1981) suggested that the concept of ‘access’ described the ‘degree of fit’ between clients and the healthcare system. The ‘degree of fit’ might be influenced by the acceptability, affordability, availability, accessibility and
accommodation of services. Pechansky and Thomas’s approach extends the concept of ‘access’ beyond measuring service availability, to take into consideration the different dimensions of the client-provider relationship such as personal, organisational and financial barriers, which are the most important factors that may affect access to healthcare services.

They identified five relevant dimensions to the client-service interaction which are as follows:

“(1) acceptability refers to attitudes and beliefs of users and providers about each other’s characteristics. Acceptability is about the relationship of clients’ attitudes about personal and practice characteristics of providers to the actual characteristics of existing providers, as well as to provider attitudes about acceptable personal characteristics of clients.

(2) affordability applies to the cost implications to the patient in relation to need; this includes both direct and indirect costs and perceptions of value. It is about the relationship of prices of services and other costs to the clients’ income and ability to pay.

(3) availability refers to the adequacy of supply given by the relationship between volume (i.e., clients) and type of services (provision) and volume (i.e., clients) and type of needs (demand). It refers to the adequacy of supply whether of physicians, dentists, other providers, or facilities such as hospitals, clinics and of specialised programmes and services.

(4) physical accessibility is defined by the suitability of the location of the service in relation to the location and mobility of the patient (geographical and physical barriers). Physical accessibility is about the relationship between the location of supply and the location of clients, taking account of client transportation resources and travel time, distance and cost.
accommodation refers to the way services are organised in relation to the client’s needs and the patient’s perception of their appropriateness (opening times, booking facilities, waiting times). Accommodation is about the relationship between the manner in which the supply resources are organised to accept clients (including appointment systems, hours of operation, walk-in facilities, telephone services) and the clients’ ability to accommodate to these factors and the clients' perception of their appropriateness.”

Scheppers et al. (2006) published a systematic review of 54 articles to present an overview of potential barriers that may prevent ethnic minority patients from accessing healthcare services. The study identified a great number of potential barriers that occur at three levels: (1) patient level, (2) healthcare provider level and (3) system level (i.e., the organisation of healthcare services).

The barriers at patient level were related to the patients’ characteristics: demographic variables (e.g., gender and marital status); social structure variables (e.g., ethnicity, education, social class and economic status, living conditions, lifestyle, family and social support, culture, duration of stay, familiarity with Western health practices, local language skills, communication, translation); health beliefs and attitudes (e.g., values concerning health and illness, perceptions and attitudes toward health services and personnel); personal enabling resources (e.g., immigration rules, income/financial means, health insurance, sources of advice and regular source of care, knowledge of health services and how to use them, available time and stress constraint); community enabling resources (e.g., availability and delivery of services, price of health services, transportation and travel time); perceived illness (e.g., perceived cause) and personal health practices (e.g., traditional remedies and self-treatment) (Scheppers et al., 2006).

The barriers at provider level were related to the provided characteristics: skills and attitudes (e.g., medical procedures and practices, ethnic matching, skills, behaviour, communication style, style of providing information, bilingualism, translation, cultural knowledge, family involvement and religion/spirituality). The barriers at
system level were related to the system characteristics: the organisation of the healthcare system (e.g., referral system, opening hours, consultancy appointments and waiting time, the length of consultation and treatment and translation) (Scheppers et al., 2006).

These potential barriers may offer a key explanation for disparities in access to health services by BME populations. The cultural barrier, for example, may limit utilisation of healthcare services among ethnic minority groups. The BME patients’ cultural perceptions about the severity of their symptoms, for instance, may act as a barrier towards urgency of seeking care, as their needs may be differently expressed. BME groups may present classical symptoms in a different way, which could result in misunderstandings, misdiagnosis, incorrect referrals or incorrect drug being prescribed. In some cultures it might be seen that the ‘husband’ answers all the questions on behalf of the patient. Hence, the actual patient may not be given the opportunity to express her concerns and opinions with regard to her drug regimens. Patients from a particular culture may prefer to be treated by a medical provider of the same gender; this may be especially true for female patients and if the medical practice has no female doctor then this group of patients may become reluctant to seek help, resulting in late presentation and worsening their diseases. Other people would rather prefer to suffer in silence than access health services as they believe that their pain or symptoms are a punishment from God, and thus they do not want to interfere with God’s decision.

Communication, language and literacy barriers are one of the major factors that may prohibit the use of health services or affect the use of medicines. Lack of language skills may affect communication between ethnic minority patients and healthcare personnel. The inability to communicate in what is not the ethnic minorities’ mother tongue may lead to discrimination; due to lack of a common language, ethnic minorities may struggle to express their inner feelings to ask questions or to present themselves or their families. Poor language skills also have an adverse effect on the confidence of the patient. This causes yet additional
emotional stress, discomfort, frustration and anxiety that often accompany medical consultations, with patients feeling neglected and isolated (Scheppers et al., 2006).

Language difficulties may have a harmful effect upon the patient’s ability to understand completely proposed treatments and remedies. They also may prevent the physicians’ attempts at obtaining vital medical history easily, which may present medical risks if a misunderstanding with regard to obtaining medical history occurs. In such cases interpreting services are required in order to adequately diagnose and treat these individuals but, even if the interpreting services are provided, some ethnic groups may feel reluctant to use a professional interpreter because they do not want to reveal their confidential information to her/him. Differences in literacy might be another important factor which acts as a barrier towards accessing services. Although people may be able to speak English they might not be able to read it and, even if letters or patient information leaflets are translated, individuals may not be able to read their own language (Scheppers et al., 2006).

Unfamiliarity with the NHS, unawareness of service availability or a lack of knowledge about the services can act as a potential barrier towards accessing services. When the ethnic minority patient has no knowledge of, for example, the function and availability of primary care workers other than physician, then the use of primary healthcare may be restricted and inappropriate to his or her needs (Scheppers et al., 2006).

In general terms, Scheppers et al.’s review suggested that there are a great number of potential barriers that may affect access to healthcare services among ethnic minority patients, such as (1) ethnic background; (2) lower education level; (3) lower social and socioeconomic status; (4) insecure living conditions; (5) poor status of health due to, for example, drug addiction or bad eating habits; (6) lack of family or social support; (7) cultural perceptions about disease or symptoms; (8) short duration of stay; (9) lower level of familiarity with Western health practices; (10) lack of local language skills; (11) ineffective communication; (12) disapproval of translation by an interpreter; (13) price of healthcare services; (14) differences in
health belief between the patient and healthcare provider; (15) disapproving perceptions and attitudes with regard to health services and personnel; (16) lack of right visas and work permits; (17) lack of financial resources; (18) non-professional advice and lack of a regular source of care; (19) unawareness of service availability and lack of knowledge about the services; (20) time limitations because of commitments to family and work; (21) stressful situations; (22) regional disadvantages and high medical cost; (23) irregular public transport; (24) different perceptions of the severity of symptoms; (25) do-it-yourself home remedy, treatment and traditional medicine; (26) application of intrusive medical procedures with insensitivity to patient need; (27) absence of ethnic matching of patients and provider; (28) discrimination; (29) using complex medical terminologies and lack of translator; (30) lack of cultural knowledge about minority cultures; (31) non-family involvement and denying the aspect of spiritual and religious factors; (32) inconvenient clinic hours; (33) the prolonged process for obtaining an appointment and prolonged waiting time; are all factors and potential barriers that may limit utilisation of healthcare services (Scheppers et al., 2006).

The reviewed studies in this article differed enormously in terms of ethnic group of participants, country of study, study setting, sample size and methodology used. Although this review is representative because it consisted of 54 articles published from 1990-2003 and the studies were carried out in different countries (n=11), different ethnic groups and care settings, the result of this review should not be generalised, because the potential barriers that were relieved may vary from country to country and from setting to setting and what is a barrier to one ethnic group may not be necessarily so to another. In addition, this review presents only journal articles. Moreover, only seven studies from the 54 were conducted in the UK. Furthermore, some of these barriers are universal problems while others are specific to a particular country, such as health insurance and referral. Finally, some of these factors affect ethnic minorities as well as the general population whereas others are specific to ethnic groups. Although this review did not indicate whether ethnic minority groups had more difficulties in accessing healthcare services than
the general population, it can be stated that people from ethnic minority backgrounds may possibly have more problems in accessing healthcare than the general population due to many potential factors that prevent them from utilising care. These potential barriers should be taken into account in order to be examined in our study and consequently inform healthcare providers to deliver the best services that can suit the expectations and needs of ethnic minority populations.

This section has looked at the range of causes of MRPs reported in the literature. The following section will investigate pharmacist-based strategies to identify and resolve MRPs and the frequency of MRPs in primary healthcare settings.

1.3.3 Identifying, resolving and preventing MRPs in primary care

The frequency of MRPs in the community, as reported in the literature, is between 2.5 - 65% (Grannas and Bates, 1999; Gordon et al., 2005; Gordon et al., 2007), including prescribing errors, adverse drug reactions and drug interactions, uncertainty and lack of knowledge about medicines, lack of monitoring and review, problems with access to services, non-adherence to medications, and cognitive, physical and sensory problems (Rupp et al., 1992; Claesson et al., 1995; Green, 1995; Goldstein et al., 1998; Westerlund et al., 1999; Paulino et al., 2004; Chen et al., 2005; Haugbølle and Sørensen, 2006; Hammerlin et al., 2007; Krähenbühl et al., 2008).

Many methods have been used to identify and quantify MRPs. These methods vary according to the following: definition and classification of MRP used, patient groups being studied, study design, sampling method, practice setting, documentation method, length of time for data collection and the number of data collectors.

Pharmacists have an active role in identifying, solving and preventing MRPs. Pharmacists’ interventions have been documented and have proven to be a valuable contribution both in primary and in secondary settings (Paulino et al., 2004). Pharmacists can identify and prevent MRPs using the following strategies:
Patient medication records (PMRs) and prescription monitoring in pharmacies.
Patient medical record (notes) reviewing in GP surgeries.
Patient interview.
Patient medicine use review (MUR) report monitoring in pharmacies.

Monitoring patient medication records (PMRs) and prescriptions is an intervention that can be used to identify, solve or prevent a MRP, especially one that is related to prescription errors, drug interactions and adherence issues. However, identifying MRPs requires access to the patients’ medical notes, full record of prescriptions, non-drug care and results from laboratory tests, which are only available at GP surgeries. The data stored on pharmacy records relies on the information as presented on prescriptions and information offered by patients. The information that appears on prescriptions corresponds to the information held on computerised medical histories in GP surgeries. Thus, prescriptions can be used to confirm the information held on GPs’ surgery records.

Because patients in the UK can only use one GP surgery, all their full medication records are held on one site, which makes using the GP surgery record an advantage over using the pharmacy record. In addition to providing information on the name and dose of the prescribed medicine, GP surgery records can also provide data on the purpose for which the medicine was prescribed and the patient’s clinical status. This data is entered on patient records for each consultation that a GP has with a patient. However, patients who receive long-term medicines to treat chronic diseases frequently obtain treatment via repeat prescriptions from GP surgeries. Although using repeat prescription reduces the workload of GPs, it increases the potential for patients to receive inappropriate or unnecessary medication over long periods of time (Corbett, 1995; Goldstein et al., 1998). Because over 80% of medicines prescribed by GPs in the United Kingdom are repeat prescriptions, pharmacist reviews of repeat prescriptions have been used to identify, solve and prevent MRPs (Harris and Dajda, 1996; Zermansky, 1996; Granas and Bates, 1999).
The types of MRPs that can be identified using patient’s records in GP surgeries and pharmacies are sometimes potential problems and could be limited because the review is retrospective. However, if prescriptions are monitored as the patient presents with them to be dispensed at pharmacies, or on the same day that they are issued by GP surgeries, this may be more useful in identifying and solving MRPs because in the absence of the patients it is often unclear from pharmacy records or medical notes alone what the patients are actually taking and it would be difficult to decide if a medicine or dose is no longer needed or inappropriate (Grannas and Bates, 1999). Further to this, patient’s interview should be considered.

Having knowledge about the patient’s total drug use as well as other factors influencing the patient’s use of medicines can help to identify or prevent actual and potential MRPs. Interviewing patients can establish exactly what medicines they are actually taking, how they use their medicines and how they store their medicines. This approach depends on the art of communication and questioning. Effective interviewing requires skills. The question regarding compliance, for example, should not embarrass the patient through the admittance that he/she ignored the healthcare provider’s instructions. Inquiring about occasional forgetfulness, on the other hand, does not seem so threatening and does not carry negative connotations (Fodor et al., 2005). The advantage of patient’s interviews is that interviewing patients, especially in their homes, will provide a useful method of collecting data to supplement medication reviews with regard to identifying MRPs. This is because in their own homes, patients feel more relaxed as they describe and elaborate on their medication- and illness-related experiences, considerations, actions and problems, meanwhile displaying the specific contents of their medicine chest. On the other hand, the sample size of the study is often limited when interviewing patients in their homes or in a designated place. Home interviews also can be costly and time consuming.

Another strategy of identifying, solving and preventing MRPs is through the medicine use review (MUR) service in pharmacies. The UK government introduced
the medicine use review (MUR) and prescription intervention service (‘MUR services’) as an advanced community pharmacy service in April 2005 (Latif and Boardman, 2008). The purpose of MURs is to establish a picture of the patients understanding and use of prescribed and non-prescribed medications. The consultation with the pharmacist provides patients with an opportunity to ask about their medicines and identifies any problems they might be experiencing along with possible solutions. These reviews are conducted privately in a consultation area within the pharmacy and the report of the review is provided both to the patient and if necessary to their GP. MURs are modelled on the concept of concordance where, during consultations with pharmacists, patients are encouraged to become increasingly empowered in their own medicine-taking decisions in order to achieve the most effective use of medicines (Latif and Boardman, 2008). The MUR will help to identify problems related to side effects, drug interactions, poor patient knowledge of their medicines, and adherence issues.

Several distinct approaches to reviewing patients’ medicines have been described in which the levels of patient engagement and clinical input vary. These can be conducted by a variety of healthcare professionals, ranging from the most basic unstructured opportunistic review through to a full clinical medication review that is conducted face-to-face with the patient and considers both the patients medicines and condition(s). MURs do not fit easily into these approaches in that there is a high level of patient engagement but absence of access to patient medical records limits the clinical input; however, MURs have been described as a ‘valuable addition’ to the medication review framework (Latif and Boardman, 2008).

1.3.4 Community pharmacists’ role in pharmaceutical care

Pharmacists in all practice settings have been encouraged to provide pharmaceutical care to identify, prevent, and resolve medicine-related problems and reduce negative medication outcomes. Pharmaceutical care has been defined as “The responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient’s quality of life.” (Hepler and Strand, 1990). A
Chapter 1 – Introduction and background

patient-centered, outcomes-oriented practice requires the pharmacist to work in concert with the patient's healthcare team to promote health, prevent disease, and assess, monitor, initiate, and modify medication use to ensure that drug-therapy regimens are safe and effective.

Studies have shown that pharmacists can reduce medication errors, improve patient outcomes, and decrease costs by providing patient-care services in a variety of settings. Pharmacists have contributed significantly to the development and implementation of intervention strategies to reduce MRPs experienced by patients (Royal et al., 2006; Holland et al., 2007; Hinchliffe, 2010). Possibly this is because it is expected of their profession to provide efficient pharmaceutical care and promote patient safety. With their expert knowledge and skills, as well as being accessible to the public, pharmacists are ideally placed to be professional advocates for preventing and solving MRPs on the front line of healthcare.

Pharmacists’ involvement in the medication monitoring and review process has been tested in a number of studies. Hinchliffe (2010) published a systematic review to examine whether pharmacist-led medication review improves pharmaceutical care and whether it is clinically and cost effective. It was revealed that pharmacist medication review can improve adherence and reduce prescribing of inappropriate medicines and consequently reduce prescribing costs and potential adverse events or reactions. There was weak evidence that pharmacist medication reviews reduce morbidity and mortality. It was also found that pharmacist medication review is more effective where there is a good professional relationship between the pharmacist and the GPs and when the pharmacist has access to more patient information on which to base recommendations.

The findings from Hinchliffe’s study agree with Royal et al.’s study (2006) and Holland et al.’s study (2007). In general terms, these studies have shown that pharmacist-led medication reviews may slightly reduce the number of prescribed drugs, and improve drug knowledge and adherence, but have no effect on the morbidity and mortality rates (Royal et al., 2006; Holland et al., 2007). These
systematic reviews and meta-analyses are considered to be well conducted with a very low risk of bias. The studies searched the most relevant key databases to the topic area (n=5-11). Two studies also searched for grey literature by website searching to identify further relevant studies (Royal et al., 2006; Hinchliffe, 2010). Reference list search and hand search were also carried out (Holland et al., 2007; Hinchliffe, 2010). A large number of search terms were used to identify relevant studies. Searches for relevant literature ranged from the period between 1981 in one study (Royal et al., 2006) and 2010 in another study (Hinchliffe, 2010). The number of identified studies ranged from 24-38. There was rigorous quality assessment and appraisal of all the identified studies. However, despite all strong evidence, there may be unpublished studies that may not have been included in these reviews. In addition, the setting for two of these reviews was primary care and their findings may be unlikely to be applicable to all healthcare settings, such as secondary care (Royal et al., 2006; Hinchliffe, 2010).

For decades, pharmacists in the community setting have performed an invaluable service for patients and their communities by avoiding medication-related problems with the use of drug utilisation review and patient counseling. In England and Wales, the NHS community pharmacy contractual framework (contract) consists of three levels of services: essential services, advanced services, and enhanced and locally commissioned services. Pharmacy owners (contractors) must provide essential services, but they can choose whether they wish to provide advanced and enhanced services (PSNC, 2013).

Essential services include (PSNC, 2013):

- Dispensing: the safe supply of medicines or appliances. Advice is given to the patient about the medicines being dispensed and how to use them. Records are kept of all medicines dispensed and significant advice provided, referrals and interventions made.
- Repeat dispensing: the management of repeat medication for up to one year, in partnership with the patient and prescriber. The patient will return to the pharmacy for repeat supplies, without first having to visit the GP
surgery. Before each supply the pharmacy will ascertain the patient’s need for a repeat supply of a particular medicine.

- Disposal of unwanted medicines: pharmacies accept unwanted medicines from individuals. The medicines are then safely disposed of.
- Promotion of Healthy Lifestyles (Public health): opportunistic one-to-one advice is given on healthy lifestyle topics, such as stopping smoking, to certain patient groups who present prescriptions for dispensing. Pharmacies will also get involved in six local campaigns a year, organised by NHS England. Campaign examples may include promotion of flu vaccination uptake or advice on increasing physical activity.
- Signposting patients to other healthcare providers: pharmacists and staff will refer patients to other healthcare professionals or care providers when appropriate. The service also includes referral on to other sources of help such as local or national patient support groups.
- Support for self-care: the provision of advice and support by pharmacy staff to enable people to derive maximum benefit from caring for themselves or their families. The main focus is on self-limiting illness, but support for people with long-term conditions is also a feature of the service.
- Clinical governance: pharmacies must have a system of clinical governance to support the provision of excellent care; requirements include: provision of a practice leaflet for patients, patient safety incident reporting to the National Reporting and Learning Service, conducting clinical audits and patient satisfaction surveys, acting upon drug alerts and product recalls to minimise patient harm, having cleanliness and infection control measures in place.

Advanced services involve (PSNC, 2013):

- Medicine use review (MUR) and prescription intervention service: the pharmacist conducts an adherence-focussed medicines review with the patient. The review assesses the patient’s use of their medicines and attempts to identify and address any problems they may be experiencing. Where necessary, a referral is made to the patient’s GP. The service aims to increase the patient’s knowledge of their medication and improve their adherence to the regimen. The MUR can be conducted on a regular basis, e.g., every 12 months, or on an ad hoc basis, when a significant problem with a patient’s medication is highlighted during the dispensing process. At least half of the MURs provided each year must be for patients who fall within one of the national target groups: patients with respiratory disease (e.g., asthma and COPD), patients recently discharged from hospital, patient taking a ‘high-risk’ medicine (NSAIDs, anticoagulants, antiplatelets and diuretics). MURs are conducted in a private consultation area, which ensures patient confidentiality.
• New medicine service (NMS): this service is designed to improve patients’ understanding of a newly prescribed medicine for a long-term condition, and help them get the most from the medicine. The pharmacist will provide the patient with information on their new medicine and how to use it when it is first dispensed. The pharmacist and patient will then agree to meet or speak by telephone in around a fortnight. At this second stage of the service the pharmacist will discuss with the patient how they are getting on with their new medicine. Further information and advice on the use of the medicine will be provided and where the patient is experiencing a problem the pharmacist shall seek to agree a solution with the patient. A final consultation (typically 21-28 days after starting the medicine) will be held to discuss the medicine and whether any issues or concerns identified during the previous consultation have been resolved. If the patient is having a significant problem with their new medicine the pharmacist may need to refer the patient to their GP. The NMS is conducted in a private consultation area, which ensures patient confidentiality.

• Appliance use review service: this service is similar to the MUR service, but it aims to help patients better understand and use their prescribed appliances (e.g., stoma appliances) rather than their medicines by (a) establishing the way the patient uses the appliance and the patient’s experience of such use; (b) identifying, discussing and assisting in the resolution of poor or ineffective use of appliance by the patient; and (c) advising the patient on the safe and appropriate storage of the appliance and proper disposal of the appliances that are used or unwanted. The service is conducted in a private consultation area or in the patient’s home.

• Stoma appliance customisation service: this service involves the customisation of a quantity of more than one stoma appliance, based on the patient's measurements or a template. The aim of the service is to ensure proper use and comfortable fitting of the stoma appliance and to improve the duration of usage, thereby reducing waste.

Enhanced services include minor ailments management, palliative care services, care home services, controlled drug, anticoagulation monitor, smoking cessation, alcohol screening, supervised administration (e.g., methadone) and weight management and obesity, out of hours services, supplementary and independent prescribing by pharmacists, medicines assessment and compliance support, etc. (PSNC, 2013).

Key messages from Chapter 1

• The ethnic minority populations in the UK are growing substantially as a consequence of continued immigration and high birth rate. Not only the UK
but also all countries over the world are diversifying in terms of ethnic makeup. Therefore, the needs and perspectives of different minority groups are of increasing importance to many countries as well as the UK.

- People from many ethnic minorities tend to perceive themselves as less healthy than those in the general UK population.
- Despite their heterogeneity, ethnic minorities in general often have a higher prevalence of chronic diseases including diabetes, cardiovascular disease, rheumatoid and respiratory disease for which effective management depends on the use of medicines.
- The higher prevalence of chronic diseases among ethnic minority populations may lead to co-morbidities and multiple drug therapies and consequently MRPs.
- Patients from different cultural backgrounds may be expected to have their own perceptions and beliefs, which will affect their use of medicines.
- Ethnic minority groups are associated with communication and language barriers, and different experiences, needs and expectations than the wider UK population which may also influence their ability to manage their medicines effectively.
- It is acknowledged in most healthcare systems that ethnic minority groups have experienced inequalities in health and in accessing healthcare services. There has been extensive research on health problems of ethnic minority groups, especially access to care, which can result in differences in health outcomes, but there has been little research which specifically examines medicines use. Also, evidence suggests that medicine-related needs may be poorly met for these groups.

As the initial literature found limited exploration of MRPs in its broadest definition among patients from EMGs, a more comprehensive literature search was conducted and will be discussed in Chapter 2, comprising an electronic, as well as a manual approach. This was performed to identify type(s) and possible contributing factor(s) of MRPs experienced by ethnic minority populations in the UK and to identify interventions or recommendations to support these groups in their use of medicines. Although some factors might be similar in all patients regardless of their ethnicity, or cultural background, it is likely that other factors might emerge specifically in these groups, given their unique cultural and religious characteristics. A flow diagram of thesis content is illustrated in Figure 1-1.
Figure 1-1: Flow diagram of thesis content.
Chapter 2 Medicine use and medicine-related problems (MRPs) experienced by ethnic minority patients in the United Kingdom: a review.

Introduction

The focus of this chapter was to review the published studies on MRPs in EMGs in the UK. The aim of this review was to establish type(s) and possible contributing factor(s) of MRPs experienced by ethnic minority populations in the UK and to identify interventions or recommendations to support these groups in their use of medicines. Because the definitions of MRPs are wide and include problems ranging from prescribing errors through to obtaining supplies, monitoring for appropriateness and patient behaviours which influence their use, a broad definition of MRPs by Gordon et al. (2005) was used in this review to include all these aspects. Gordon et al. (2005) defined an MRP as “any problem experienced by a patient that may impact on their ability to manage or take their medicines effectively” (Gordon et al., 2005).

2.1 Materials and Methods

2.1.1 Data sources

Electronic databases of PubMed, Embase, International Pharmaceutical Abstract (IPA) and Scopus were searched for the period from 1990 to 2011. Reference lists of retrieved articles and relevant review articles were manually examined for further relevant studies. A hand search of key journals: the International Journal of Pharmacy Practice, Pharmacy World and Science and the Annals of Pharmacotherapy was also performed.
2.1.2 Search terms and search strategy

Identifying studies of MRPs experienced by ethnic minorities in the UK presented challenges. The review commenced with three main keywords: ‘medicine-related problem’, ‘ethnicity’ and ‘United Kingdom’. Lists of search terms associated with each keyword were generated from MeSH (medical subject heading) terms in PubMed and term mapping database in Embase (Ovid). MeSH terms and Map terms provide a consistent way to retrieve information that may use different terminology for the same concepts. Relevant terms were also handpicked from the literature during the course of the review (Van Mil et al., 2004; AbuRuz et al., 2006). Keywords not listed as MeSH or Map Terms were searched as phrases using the free text search mode.

‘Medicine-related problem’ or ‘drug-related problem’ are not key words, MeSH terms or Map terms. Thus, a number of terms were required to describe problems related to the use of medications such as adverse drug reaction, adverse drug event, drug therapy problem and medication error. A further list of search terms was generated by referring to two key papers. The first article was a review on MRP classification systems by van Mil et al. (2004) which provided an overview and appraisal of classification of medicine-related problems for use during the pharmaceutical care process and research in pharmacy (van Mil et al., 2004). The second article by AbuRuz et al. (2006) aimed to develop and validate a tool to classify and assess MRPs in which an MRP was referred to as ‘treatment related problem’ (AbuRuz et al., 2006). These two articles had also reported difficulties in identifying previous literature on MRPs from databases. Each article suggested a list of search terms for ‘medicine-related problems’ (van Mil et al., 2004; AbuRuz et al., 2006). The search terms reported by these articles include drug related problem, medicine related problem (van Mil et al., 2004; AbuRuz et al., 2006), drug therapy problem, treatment related problem, therapy related problem, medication error and pharmaceutical care issue (AbuRuz et al., 2006). The different keywords used to search for relevant articles in this review are presented in Appendix 2.
A further difficulty was the limited reporting of the ethnic profile of participants in previous studies. It has been argued that the under-representation of minority ethnic groups in studies may be because participants of ethnic minorities fail to understand the importance of the research process or they are unable to participate because of the language barriers (Harris et al., 1996). However, another possible explanation would be that some researchers have not received training or do not recognise the complexity or importance of incorporating the perspective of minority populations into their research and thus assume the cultural perspective or need of the majority in the conduct of their research (Rabionet., 2009).

2.1.3 Selection criteria

The articles were selected through titles and abstracts by the researcher. The criteria for relevant studies were: (1) involving people from an ethnic minority background and aged over 18, (2) relevant studies were those reporting types and/or potential causes of MRPs and/or interventions or recommendations made to address the problems or to support ethnic minorities in the use of medicines, (3) studies reported in English Language and conducted in the UK, (4) original research employing quantitative and/or qualitative methods as well as literature reviews.

2.1.4 Process of data extraction

Electronic databases were searched and duplicate articles were removed. All articles were reviewed manually by title, abstract and/or full-text for relevance. The reference lists of retrieved articles and relevant review articles were manually examined for further applicable studies. The key journals were also manually screened for further relevant articles. Full text manuscripts were retrieved either electronically or as hard copy for assessment. Information was extracted into a proforma which included: primary author name and date of publication, study design and study duration, participants’ age, setting, sample, type(s) and possible cause(s) of MRPs, intervention or recommendations to address the problems or to support ethnic minorities in the use of medicines. A flow chart of data extraction is
illustrated in Figure 2-1. Studies of medicine-related problems experienced by ethnic minority patients in the UK are attached as Appendix 3.
2.2 Results

The electronic database search retrieved a total of 145 titles, of which two were duplicates. Screening of titles, abstracts and/or full texts for the remaining 143 identified that six were related to medicine-related problems (Chan, 2000; Morgan and Figueroa-Muñoz, 2005; McDowell et al., 2006; Ormerod et al., 2008; Opara et al., 2010; Tsang et al., 2010). Manual screening of the journals retrieved one article (Kumar et al., 2008) and a hand search of citations retrieved articles from the electronic database and journals lead to a further eight articles (Wheatly and Shelly, 1993; Lip et al., 2002; Horne et al., 2004; Lip et al., 2004; Pardhan and Mahomed, 2004; Gordon et al., 2007; Lawton et al., 2005; Sidi et al., 2009). Thus, 15 articles in total were included in this review. The summary of literature review search process is illustrated in Figure 2-2.

Twelve studies, from the fifteen, examined patients’ perspectives on, and experiences of, the use of medicines in terms of views and actions regarding illness and the use of medicines (Wheatly and Shelly, 1993; Chan, 2000; Lip et al., 2002; Horne et al., 2004; Lip et al., 2004; Pardhan and Mahomed, 2004; Lawton et al., 2005; Morgan and Figueroa-Muñoz, 2005; Gordon et al., 2007; Kumar et al., 2008; Sidi et al., 2009; Opara et al., 2010). The remaining studies (n=3) examined medicine-related problems in terms of adverse drug reactions (ADR) (McDowell et al., 2006; Ormerod et al., 2008) or adverse events (AEs) (Tsang et al., 2010).

The studies included: quantitative studies (n=6) (Lip et al., 2002; Horne et al., 2004; Lip et al., 2004; Pardhan and Mahomed, 2004; Kumar et al., 2008; Tsang et al., 2010); qualitative studies (n=4) (Chan, 2000; Lawton et al., 2005; Morgan and Figueroa-Muñoz, 2005; Gordon et al., 2007); studies that combined quantitative and qualitative methods (n=2) (Sidi et al., 2009; Opara et al., 2010); and systematic reviews (n=2) (McDowell et al., 2006; Ormerod et al., 2008).
Data were collected in surveys (Lip et al., 2002; Horne et al., 2004; Lip et al., 2004; Pardhan and Mahomed, 2004), semi-structured interviews (Chan, 2000; Pardhan and Mahomed, 2004; Lawton et al., 2005; Sidi et al., 2009; Opara et al., 2010) or focus group interviews (Morgan and Figueroa-Muñoz, 2005). Fourteen of the studies were conducted among adult populations and one included all ages (Tsang
et al., 2010). The settings of these studies were GP practices (n=2) (Chan., 2000; Tsang et al., 2010), clinics (n=4) (Lip et al., 2002; Lip et al., 2004; Pardhan and Mahomed, 2004; Kumar et al., 2008), community pharmacies (n=2) (Sidi et al., 2009; Opara et al., 2010), community centres (n=1) (Morgan and Figueroa-Muñoz, 2005), and patients’ homes (n=3) (Chan, 2000; Lawton et al., 2005; Gordon et al., 2007). The studies were carried out in the UK and a great number of ethnic minorities were involved such as South Asian (McDowell et al., 2006; Ormerod et al., 2008; Sidi et al., 2009; Opara et al., 2010; Tsang et al., 2010), Afro-Carribbean (Lip et al., 2002; Lip et al., 2004; Lawton et al., 2005; Morgan and Figueroa-Muñoz, 2005; McDowell et al., 2006; Gordon et al., 2007; Ormerod et al., 2008), Chinese (Chan, 2000). Five studies, from the fifteen, evaluated MRPs among patients with a specific long term condition (Wheatly and Shelly, 1993; Lip et al., 2002; Lip et al., 2004; Pardhan and Mahomed, 2004; Morgan and Figueroa-Muñoz, 2005).

2.2.1 Type(s) and possible cause(s) of MRPs identified across studies

The MRPs identified by the literature search among ethnic minorities across the studies included limited knowledge of illness as well as its consequences and therapies (Lip et al., 2002; Horne et al., 2004; Lip et al., 2004; Pardhan and Mahomed, 2004; Lawton et al., 2005; Morgan and Figueroa-Muñoz, 2005; Gordon et al., 2007; Sidi et al., 2009), problems with not taking medicines as advised (Wheatly and Shelly, 1993; Chan, 2000; Lip et al., 2002; Horne et al., 2004; Lip et al., 2004; Pardhan and Mahomed, 2004; Lawton et al., 2005; Morgan and Figueroa-Muñoz, 2005; Kumar et al., 2008; Sidi et al., 2009; Opara et al., 2010), problems with missing clinical appointments (Pardhan and Mahomed, 2004), high risk of adverse drug reactions (McDowell et al., 2006; Ormerod et al., 2008), drug interactions and adverse events (Tsang et al., 2010), concern or fear of dependency or side effects of the drugs (Morgan and Figueroa-Muñoz, 2005; Gordon et al., 2007), cognitive, physical and sensory problems affecting use of medicines Gordon et al., 2007), language and communication barriers (Chan, 2000; Sidi et al., 2009), lack of regular monitoring and review of medicines (Lip et al., 2002; Gordon et al.,
problems with non-prescription medicines (Chan, 2000; Opara et al., 2010), and problems in use of, and access to healthcare services (Chan, 2000; Morgan and Figueroa-Muñoz, 2005; Gordon et al., 2007).

The most frequently reported types of MRPs were: limited knowledge of illness, its consequences and therapies (Lip et al., 2002; Horne et al., 2004; Lip et al., 2004; Pardhan and Mahomed, 2004; Lawton et al., 2005; Morgan and Figueroa-Muñoz, 2005; Gordon et al., 2007; Sidi et al., 2009), and problems with not taking medicines as advised (Wheatly and Shelly, 1993; Chan, 2000; Lip et al., 2002; Lip et al., 2004; Pardhan and Mahomed, 2004; Lawton et al., 2005; Morgan and Figueroa-Muñoz, 2005; Kumar et al., 2008; Sidi et al., 2009; Opara et al., 2010). These are common to other populations. However, in ethnic minority groups differing cultural perceptions or beliefs about health, illness, prescribed treatment and medical care may also impact on the use of medicines (Chan, 2000; Lip et al., 2002; Horne et al., 2004; Lip et al., 2004; Pardhan and Mahomed, 2004; Lawton et al., 2005; Morgan and Figueroa-Muñoz, 2005; Kumar et al., 2008). Ethnic minority groups have also been shown to have different experiences, needs, values and expectations of illness, prescribed treatment and medical care (Chan, 2000; Horne et al., 2004; Morgan and Figueroa-Muñoz, 2005). In addition, language and communication barriers have been identified in the literature as a possible contributory factor to MRPs (Sidi et al., 2009) as well as affecting the use of health services (Chan, 2000; Lip et al., 2002; Horne et al., 2004; Lip et al., 2004; Pardhan and Mahomed, 2004; Scheppers et al., 2006; Sidi et al., 2009). This is because some authors believed that lack of language skills may affect communication between ethnic minority patients and healthcare personnel. It is suggested that the inability to communicate in what is not the ethnic minorities’ mother tongue may lead to discrimination, due to lack of a common language, ethnic minorities may struggle to express themselves and to feel comfortable asking questions (Scheppers et al., 2006). Language difficulties can have a harmful effect upon the patient’s ability to understand completely proposed treatments and remedies (Scheppers et al., 2006). They also prevent the physicians’
attempts at obtaining vital medical history easily which may present medical risks if a misunderstanding with obtaining medical history occurs (Scheppers et al., 2006).

Another factor that may cause a medicine-related problem identified in the literature included the difficulty in obtaining a suitable interpreter among friends or relatives (Chan, 2000) or relying on relatives or interpreters which may lead to information being lost or changed (Morgan and Figueroa-Muñoz, 2005). Religious influences (Wheatly and Shelly, 1993; Lip et al., 2002; Lip et al., 2004; Pardhan and Mahomed, 2004), high expectations and negative perceptions and attitudes towards healthcare services and healthcare providers have also been identified across the studies as a potential cause of MRPs (Chan, 2000; Morgan and Figueroa-Muñoz, 2005; Opara et al., 2010). Lack of knowledge of the healthcare services and how to use them is also a further possible contributing factor for MRPs that has been identified, for example some ethnic minority patients have no knowledge of the pharmaceutical care role of pharmacists which may lead to lack of regular monitoring and review of their medicines (Chan, 2000; Opara et al., 2010). According to the literature, underestimating patients’ desire for information which may be a consequence of a lack of awareness of the extent of patients’ decision-making regarding the use of their medicines and/or poor appreciation of their experience of MRPs (Gordon et al., 2007) may probably cause MRPs.

2.2.2 Recommendations made to support ethnic minority patients in the use of medicines

Some recommendations were made across the studies to support patients in the use of medicines. The recommendations involved providing patient counselling and education programmes about their disease, its management and medicines and the service available (Lawton et al., 2005; Morgan and Figueroa-Muñoz, 2005), providing an interpreter for ethnic minorities who cannot speak English, using pictorial flashcards to provide information for illiterate people (Pardhan and Mahomed, 2004), providing bilingual link-workers who explain reasons for regular appointments and provide encouragement and cultural bridge between healthcare
professionals and patients (Pardhan and Mahomed, 2004; Lawton et al., 2005),
increasing involvement of ethnic minorities in decisions about healthcare provision
and utilisation (Chan, 2000), involving patients in evidence-informed decision
making for safer and more effective disease and medicine managements (Gordon et
al., 2007).

Further recommendations included improving provider-patients communication by
understanding of cultural factors that inform their beliefs and practices but also
that mechanisms are in place to ensure effective transfer of information (Lawton et
al., 2005), encouraging pharmacists and patients to work together and share their
experiences regarding the use of medicines and exchange information that will
support patients achieving optimal outcomes from their medicines (Gordon et al.,
2007), encouraging effective reliable communication between secondary and
primary care, surgeries, pharmacies and patients for the continuity of safe and
effective therapy (Gordon et al., 2007), providing enhanced pharmaceutical services
in area of health inequalities and to such minority groups (Opara et al., 2010).

2.3 Discussion
This review brings together the information in the current literature regarding
medicine use and medication related problems experienced by ethnic minority
groups in the UK. Our findings suggest that there was variability seen in type(s) and
possible cause(s) of MRPs identified across studies as well as recommendations
made to support these groups in their use of medicines, which may be explained by
differences in purpose of the study, ethnic group of participants, definition of a
medicine-related problem, different disease condition, study setting, methodology
used and the duration of follow-up for problem identification. However, common
issues such as access to care and cultural perspective arise across different ethnic
minority groups.

Identifying studies and key words on MRPs experienced by ethnic minority
populations in the UK were challenging. Thus, there is a possibility that some
relevant studies were not included despite a thorough investigation. Secondly, to ensure a scientific evidence base this review includes only peer reviewed journal articles. As discussed above, some of the studies included in this review were either small with numbers of ethnic minority participants (ranging from 17-44, with a median of 32 patients) (Wheatly and Shelly, 1993; Chan, 2000; Lawton et al., 2005; Morgan and Figueroa-Muñoz, 2005; Gordon et al., 2007; Sidi et al., 2009), or did not report the sample size (n=3) (Wheatly and Shelly, 1993; Opara et al., 2010; Tsang et al., 2010). The results are also limited by the short length of follow-up for problem identification (Chan, 2000; Horne et al., 2004; Lawton et al., 2005; Morgan and Figueroa-Muñoz, 2005; Gordon et al., 2007; Sidi et al., 2009; Opara et al., 2010). A further limitation is that different terms and definitions were used to describe MRPs among the selected studies. For example, some studies used a wide holistic definition to identify MRPs (Gordon et al., 2007; Sidi et al., 2009; Opara et al., 2010) others used a narrow definition such as ADR (McDowell et al., 2006; Ormerod et al., 2008), ADE (Tsang et al., 2010) or adherence (Lawton et al., 2005; Morgan and Figueroa-Muñoz, 2005) or used no universally accepted definition (Chan, 2000; Lip et al., 2002; Horne et al., 2004; Lip et al., 2004; Pardhan and Mahomed, 2004; Kumar et al., 2008). Finally, this review focused on ethnic minority groups in the UK. Whilst some similarities and differences might be expected elsewhere, the extent to which findings are relevant to population groups in other countries, societies, settings and contexts is unclear.

There has been no holistic approach or systematic investigation of MRPs among ethnic minorities in the UK. This review highlights that ethnic minority patients have their own problems and needs with both medicine use and service access and also that some ethnic minority groups may be at higher risk of MRPs than the majority ethnic group (Lip et al., 2002; Lip et al., 2004; Pardhan and Mahomed, 2004; Lawton et al., 2005; McDowell et al., 2006; Ormerod et al., 2008). This is possibly because ethnic minority patients may experience more difficulties in accessing healthcare services, getting the correct diagnosis and medicine, being supported with the use of medicines and getting regular monitoring or review. The full body of evidence on
the extent to which ethnic minorities have more or less MRPs than the majority ethnic group is lacking. However, we can anticipate that ethnic minorities have their own perspectives and needs because of cultural and religious issues, language and communication barriers, previous experiences and different expectations. Recommendations made in the literature to support ethnic minorities in the effective use of medicines have not been evaluated. The recommendations need to be addressed to all stages including diagnosis of disease, safe and effective use of medicines, monitoring or review of their chronic disease and medication regimens.

Differences in the use of medicines would be expected between different ethnic minority groups. However, this review clearly shows that articles on medicine use and medicine-related problems experienced by ethnic minorities in the UK are limited in number. As a consequence, it is not possible to separately identify MRPs from perspective of each ethnic minority group. Little evidence is known of what influences MRPs among ethnic minorities, despite the diversifying world in terms of ethnic makeup and expanding field of research in use of medicines. Therefore, there is a need for more studies that examine medicine related needs for ethnic minority groups to ensure we effectively serve the needs of all populations and that all groups are supported in their use of medicines.

2.4 Conclusion

There has been no holistic approach or systematic investigation of MRPs among ethnic minorities in the UK. However, this review highlights that ethnic minority patients have their own problems and needs with both medicine use and service access. Therefore, there is a need for further research to be done in this area and for these patient groups. This review has been published.
2.5 Implications for further research

The findings from this review have wide-ranging and important implications for research community in the UK and beyond. For instance, researchers should include ethnic minority groups more in health research, and the research should be designed to identify and address the needs and perspectives of ethnic minority groups. Researchers should also ensure that ethnic minority groups fully understand what taking part involves, for example by generating translated materials and using interpreters when needed. Further research should be a priority internationally. Whilst many problems and solutions may be context specific, issues such as access to care and differing cultural perspectives which are common among ethnic minority groups in the UK may occur among ethnic minority groups living in other countries.

Key messages from Chapter 2

- Medicine-related problems remain unresolved despite decades of research. It was highlighted that one of the most striking reasons for the lack of progress in the research might be the absence of the patient’s perspective (Gordon et al., 2005; Gordon et al., 2007).

- This review highlights that ethnic minority patients have their own problems and needs with both medicine use and service access. Little evidence is known of what influences MRPs among ethnic minority groups, despite the increased diversification of populations in countries throughout the world. Therefore, research in this area and in EMGs is needed to better understand and manage MRPs.

- If no action is taken into account to address these issues and to support these patients, this will lead to poor chronic disease management and consequently more hospitalisation, comorbidities, and wasted resources. Therefore, research questions of the main study were:

  Q1. What are the different types of medicine-related problems (MRPs) experienced by South Asian and Middle Eastern populations with chronic diseases in primary care?

  Q2. What are the contributory factors of MRPs among South Asian and Middle Eastern populations?

  Q3. What resolution strategies can be employed to minimise the occurrence of MRPs?
2.6 Study aim and objectives

From the review of the available literature, the aim of this study was to identify MRPs experienced by South Asian and Middle Eastern patients with chronic diseases in primary care and to evaluate contributory factors that influence MRPs in order to identify how patients may be supported in the use of their medicines.

To achieve this aim eight objectives were set for the main study. These were:

1. To explore and describe medicine and service use issues experienced by South Asian and Middle Eastern patients from their perspectives.
2. To identify the frequency and different types of medicine-related problems (MRPs) experienced by patients of South Asian and Middle Eastern origins.
3. To identify factors which may contribute to medicine-related problems experienced by South Asian and Middle Eastern patients.
4. To offer a valuable tool that can be used in these populations as well as a revised coding frame.
5. To describe differences between SA and ME participants in terms of response rate, demographic details, medication-taking behavior and pharmacy and health service issues experienced by these two groups.
6. To evaluate the extent of non-adherence to medications using 8-item Morisky Medication Adherence Scale.
7. To suggest recommendations to support patients in their use of medicines.
8. To examine the perspectives of pharmacists on MRPs identified and recommendations made to validate the results and address these problems among SA and ME groups.

The next chapter presents a research context and methodological approach that were used to answer research questions and achieve study objectives.
Chapter 3  Research context and methodology of medications use and medicine-related problems (MRPs) experienced by South Asian (SA) and Middle Eastern (ME) patients with chronic diseases in primary care in the UK

Introduction

This chapter consists of two parts. The first part, 3.1, reports the theoretical framework of the main study and justifies the selection of particular measures and procedures to achieve the study objectives. The second part, 3.2, describes the research design and methods used in this research for data collection to meet the aim and objectives of the main study. It also reports the outcomes of the preliminary study conducted to identify logistical problems for the main study.

3.1  Theoretical or conceptual Framework, and rationale for the chosen research methods

The literature review presented in Chapter 1 and systematic review in Chapter 2 have discussed the background issues relating to this study and have revealed that the majority of the research in the field of MRPs has been provider rather than consumer led. There was also limited research involving SA and ME groups’ perspectives on MRPs and on how these problems might be addressed. Therefore, it seemed prudent to conduct semi-structured face-to-face interviews (i.e., MRPs questionnaire) and to use a thematic approach in order to reveal the MRPs experienced by SA and ME patients and address medicine-related needs of patients which might resolve MRPs. The advantage of using thematic analysis or content analysis approaches is that they identify commonalities and differences in qualitative data, before focusing on relationships between different parts of the data, thereby seeking to draw descriptive and/or explanatory conclusions clustered around themes or problems.
The literature search has also shown that there was an absence of articles that measure the extent of non-adherence to medication among SA and ME populations in the UK, a country which has a sizable SA population (Ens et al., 2013). The literature also reported that the SA population tends to perceive themselves as less healthy than those in the general UK population (NHS Health and Social Care Information Centre, 2005). Therefore, it seemed crucial to conduct surveys (i.e., EuroQol 5D-3L and 8-item Morisky Medication Adherence Scale) to assess health status and level of non-adherence among SA and ME groups respectively. This was because assessing health, level of adherence, medicine-related problems and needs of any population or targeted group is a necessary and crucial part of delivering a high quality of care to that population or targeted group. If no action is taken into account to address these issues and to support these patients, this will lead to poor chronic disease management and consequently more hospitalisation, comorbidities, and wasted resources.

**Approaches to assessing health, level of adherence, medicine-related problems and needs and rationale for the chosen methods**

**Rationale behind choosing a mixed-methods approach**

The term ‘mixed-methods research’ has been used to describe those studies that combine quantitative and qualitative methods (Richey and Klein, 2007). This approach was supported by a statement emphasising the need for a mixed-method approach: “quantitative and qualitative approaches are more useful when used together than when either is used alone... [and] when combined, are likely to yield a richer and more valid understanding” (Richey and Klein, 2007). A mixed-methods approach was selected in this study to develop a great and a more complete knowledge and understanding of the MRP phenomenon, which is necessary to inform practice. This method is used when the researcher believes that neither qualitative nor quantitative data collection techniques alone are likely to answer the research questions so one method will inform the other, producing an insight and understanding not possible if either had been used alone (Smith, 2002; Bowling
and Ebrahim, 2005). Using a mixed-methods approach can result in better examining, explaining, confirming, refuting and/or enriching information. It can also result in better analysis and consequently better recommendations or actions (Smith, 2002; Bowling and Ebrahim, 2005).

The mixed-methods approach has been employed in previous studies that examined medicine-related problems using patients’ interviews and case notes and/or pharmacy records reviews (Cunningham et al., 1997; Howard et al., 2003; Pirmohamed et al., 2004; Gordon et al., 2005; Sidi et al., 2009; Opara et al., 2010). The quantitative methods approach used in those studies aimed at quantifying or measuring a phenomenon in order to test theories, compare groups or make strong predictions. For example, a quantitative method approach has been used in the context of conducting research in the topic area of MRPs in order to investigate the frequency or prevalence of MRPs as well as to predict the risk factors for MRPs and to quantify the relationship between MRPs and clearly defined variables. In this study, the quantitative method was chosen to quantify the types and extent of MRPs. In addition, this method was selected to count the extent of non-adherence and to measure the health status of SA and ME participants.

In contrast, the qualitative methods used in previous studies that examined medicine-related problems focused on understanding the meanings assigned to a phenomenon from perspectives, behaviours, experiences and feelings of individuals in order to verify descriptive information retrieved from case notes or pharmacy records or to generate hypotheses. In the context of conducting research in the topic area of MRPs, qualitative methods were used in order to understand the meaning assigned to MRPs from participants’ views, beliefs and experiences and to identify the possible factors that may contribute to the problems. The qualitative method in this study was chosen to explore medicine and service use issues and to identify factors which may contribute to the problems.

The mixed-method approach to research is referred to as triangulation. Triangulation of several methods was necessary to achieve the study objectives in
this research. Semi-structured interviews, medicine use reviews (MUR) and patient medication record (PMR) reviews were all used in this study as a way of triangulation. The main advantage to the triangulation design is that it provides interpretation of the data and assigns meaning to the collected information (i.e., numbers can be used to add precision to words, pictures, narrative or, conversely, words, pictures and narrative can be used to add meaning to numbers) (Smith, 2002; Bowling and Ebrahim, 2005). It can answer a more complete and broader range of research questions because the researcher is not confined to a single approach. It is also efficient because both types of data are collected at approximately the same time. Thirdly, each type of data collection can be collected separately by a member of the research team who is expert in the area. Finally, this method can provide stronger evidence for conclusion through corroboration and convergence of findings. The disadvantages of triangulation design are the amount of money, effort and expertise required to conduct this type of study are considerable because investigators should be expert in both types of data collections. Finally, results from the two data types may not agree, which may require the collection of further data to resolve the problem (Smith, 2002; Bowling and Ebrahim, 2005). In the current study, the purpose of the triangulation design was to obtain complementary data on the same topic in order to validate or address a set of related issues to gain a deeper understanding of the subject area. The information from semi-structured interviews, MUR and PMR reviews was collected simultaneously (i.e., at the same time) and then interpreted simultaneously in the research report (Smith, 2002; Bowling and Ebrahim, 2005). A specific form was used to obtain data from pharmacy records for each participant, see Appendix 4.

Rationale behind choosing a face-to-face semi-structured interview method

There are different methods in qualitative approach for data collection such as in-depth structured, semi-structured and unstructured interviews which can include group discussion or focus groups, interviews, participant and non-participant
observational studies, oral and life histories, and analysis of textual and narrative sources such as reports, diaries, and film or television (Bowling and Ebrahim, 2005). Despite the diversity of methods and approaches involved in qualitative data gathering, interview in particular seemed to be the most appropriate method to meet the study aims and objectives of this research because interviews offer a flexible, practical, and relatively economical way of gathering research data. There are a number of advantages to this research method, such as: making it possible for the researcher to directly intervene in the research process; allowing the researcher to guide participants to talk about specific issues in a private context; and allowing the researcher to ask a number of participants the same broad questions on a particular theme (Bowling and Ebrahim, 2005). By using the interview method the researcher should be prepared to ask questions throughout data collection and analysis as well as to consider new issues that may be raised during interview in order to get a deeper understanding of phenomena of interest in their natural context. It can also clarify the diversity of meanings assigned by different participants to a certain concern or event (Smith, 2002; Bowling and Ebrahim, 2005).

Face-to-face interviews offer an advantage over the other methods of qualitative data collection. Qualitative interviews consist of three main types, namely structured, unstructured and semi-structured interviews. Each method serves a different purpose and therefore requires a different procedure. Firstly, structured or standardised interviews, which are normally used in quantitative or survey research and involve asking the same set of specific questions in precisely the same way to every research participant (Bowling and Ebrahim, 2005). Structured interviews consist of ‘closed’ questions. This approach is used when the researcher’s time is limited and there is a need to collect specific data in a comprehensive manner (Kvale, 1996). This approach is also used when the researcher wants to test a hypothesis or attempt to generalise beyond the immediate sample. It is not, however, an appropriate method within qualitative
research, where the aim is to uncover the meaning of events in the meaning of research participants (Bowling and Ebrahim, 2005).

Conversely, unstructured interviews are entirely participant-led, which means that the research participants are allowed to tell their own stories, experiences, attitudes, behaviours, at length, in their own words with little intervention or direction from the researcher. The questions in this type of interview are open in order to search deep beneath the surface of superficial response. Despite the rich data that the unstructured interviews can offer, the approach has some disadvantages such as it generates large amounts of data that then need to be analysed; due to the time limitation a small number of participants may be included, which creates doubt about the representativeness of the data collected; there also may be greater possibility of interviewer bias; and this method is expensive and time-consuming and requires a particular set of approaches and skills (Bowling, 2002; Bowling and Ebrahim, 2005). Hence, for many qualitative health-related research projects, the semi-structured interview is more likely to be used because of its efficacy in gathering research data (Bowling and Ebrahim, 2005).

Mixed-method face-to-face semi-structured interview was chosen to be the most appropriate method to evaluate MRPs experienced by South Asian and Middle Eastern patients with chronic diseases from their perspectives and to identify how patients may be supported in the use of their medicines. This is because it is the most commonly used qualitative method (Pope and Mays, 2006). Semi-structured interviews consist of both ‘open’ and ‘closed’ questions, which are planned but flexible, in order to allow the participants to develop their own narratives or reply in their own words and give their opinion in depth and in full while the researcher controls the interview via a structured topic guide that is important to the research questions (Bowling, 2002; Bowling and Ebrahim, 2005). Semi-structured interviews allow the participants the opportunity to expand on areas which they feel are important, to uncover their ‘framework of meanings’ and thus enable complex issues to be examined and provide rich information in context (Britten, 1995). This
method also allows a wide range of views to be captured and the researcher can probe for more details or return to the same topic for clarification (Bowling and Ebrahim, 2005). In addition, semi-structured interviews can generate unexpected findings which give valuable additional insight into the research topic and which may be left uncovered or missed if only quantitative methods were used (Smith, 2002). Moreover, using a one-to-one approach makes the respondents more confident and comfortable to discuss or share any information, which may include sensitive topics such as discuss their disease and the problems they are having with its management (Bowling and Ebrahim, 2005). Furthermore, the response rate is higher with face-to-face interviews compared to postal questionnaires or telephone interviews (Harding et al., 2001; Bowling, 2002). This method also allows the researcher to gain both qualitative and quantitative data. Finally, tools that are used in semi-structured interviews can be modified to suit each individual (Harding et al., 2001). The drawbacks of face-to-face interviews include being time consuming, expensive and subjective to both interviewer and respondent bias, having a small sample size and, finally, the information obtained is dependent on the skills of interviewer (Harding et al., 2001).

Another qualitative method that can be used to meet the aim and objectives of this study is the focus group. Focus groups stimulate discussion, generate a breadth of ideas, focus on the most important topics raised, and explore insights in greater depth than traditional interviews (Bowling, 2002). They also allow the gaining of access to participants who are ‘difficult to access’, where literacy and confidence problems may exclude them from other individually-focused research studies. Focus groups can tackle sensitive topics in a supportive environment where a one-to-one approach may become too ‘loaded’ (Bowling and Ebrahim, 2005). Sample size is high and the focus group method is enjoyed by respondents (Harding et al., 2001).

Despite all the advantages of focus groups, this method cannot be used in this study. This is because the medicine use and medicine-related problems topic may
involve complex and sensitive means of physical, psychological, spiritual, cultural, social aspects or dimensions in the lives of respondents, which may limit confidentiality and inhibit the deep exploration of respondents’ views (Harding et al., 2001; Smith, 2002; Bowling and Ebrahim, 2005). In addition, it is neither favourable nor usual for participants from SA and ME cultures to discuss their personal views and issues in front of strangers or in mixed gender groups, which may prohibit the deep exploration of participants’ views and perceptions. Moreover, this method is not suitable for participants who have limited physical activity and difficulty in travelling (Kirkevold and Bergland, 2007). Focus group studies also produce ‘messy’ data in comparison to other data collection methods. It may be time-consuming to analyse many transcripts and each group will naturally differ in terms of order in which they address specific issues and how they are discussed (Bowling and Ebrahim, 2005). A limited number of questions may be asked, conflicts may arise, a skilled interviewer is needed and, further, this method is expensive and difficult to control (Harding et al., 2001). Finally, a researcher combined three group interviews with ten individual interviews in an exploratory study of elderly women’s perceptions of control, health and aging. It was found that more in-depth results were generated from individual interviews compared to focus group interviews and in the group discussion not all the participants were able to comment on all issues (Mitchell, 1996).

Survey, which is one of the quantitative methods that can be used to collect data, is considered appropriate for this study to assess extent of non-adherence and to measure health status of SA and ME participants. It was used because it is less expensive, is a quick process, has a large sample size and is a guarantee for anonymity of participants (Harding et al., 2001).

Having chosen the appropriate methods for data collection, the next step was to determine the most appropriate tools or questionnaires to meet the research aim and objectives.
Chapter 3 – Research context and methodology

*Rationale behind choosing the MRPs questionnaire from Gordon et al. (2005)*

In order to assess MRPs from the patients’ perspective, a semi-structured tool which included an adapted version of the MRPs questionnaire for Gordon et al. (2005) was employed. The MRPs questionnaire (English and Arabic versions) is available as Appendix 5.

The Gordon et al. (2005) MRPs screening tool was developed based on the previous literature for the identification of MRPs. The reasons behind choosing this tool in particular were because this tool is short and practical and it employs a broad definition of MRPs: “any problem experienced by a patient that may impact on their ability to manage or take their medicines effectively” (Gordon et al., 2005) and, when a broad definition is used, an increased number of MRPs can be identified. In addition, to our knowledge this is the only tool available that is designed as a semi-structured interview. Other researchers usually identify MRPs through patients’ medication review and not through patients’ interviews. This tool consists of closed and open questions with probes to help identify whether, from the patient’s perspective, they believe they have any MRPs by obtaining systematic information and detailed explanation and clarification (Gordon et al., 2005). It also provides a structured framework in which quantitative data could be obtained. It also seeks to explore factors and events leading to MRPs from the patient’s perspective. The open questions and the in-depth nature will enable a detailed documentation of MRPs from patients’ perspectives. Moreover, this tool was developed to be brief and easy to apply. Moreover, the screening tool includes questions regarding not only medicine use but also service access and, because ethnic minority groups are known to experience barriers to service access, this tool seems to be appropriate to identify what problems and barriers these groups are having with service use or access (Gordon et al., 2005).

This interview will also discover from the patients’ perspective what services or facilities will help to prevent future MRPs. It will seek to discover if services and facilities currently in place are effective from their perspective, if they are aware of
these services and how often they access these facilities. This tool has shown that it can be used in a range of settings to identify MRPs. Finally, the MRPs questionnaire is a valid tool and is able to correctly distinguish between patients with at least one MRP and those identified with no MRPs (for 83% of the cases). This tool is also reliable. The reliability of the procedure for categorising the MRPs was evaluated by assessing the level of agreement between three independent assessors. Two assessors agreed with 100% of the categorisation and one with 99% of categorisation (Gordon et al., 2005). This tool was also tested for its usability in practice in people from White, Black (Gordon et al., 2005) and South Asian origins (Sidi et al., 2009; Opara et al., 2010). The advantage of this tool over the medication review instrument used with patients present in pharmacies or surgeries is that this tool is able to identify a wide range of MRPs regarding the lack of opportunity to discuss MRPs, problems with monitoring and review of medicines, problems with process for obtaining repeat prescriptions through GP or pharmacy, and problems with pharmacy or surgery services use (Gordon et al., 2005). The MRPs questionnaire and coding frame is divided into five sections which involved questions regarding medicine and service use (Gordon et al., 2005):

1. Use of prescription and non-prescription medicines (About your medicine).
2. Personal characteristics including age, sex, country of birth, ethnic group, and whether or not they live alone (About Yourself).
3. Number of hospital admissions including accident and emergency, consultations as an outpatient or with private healthcare professional in the past five years (About the illnesses for which you take your medicines).
4. Self-reporting non-compliance (intentional and unintentional) with prescription medicines and the nature and frequency of their non-compliance (More about your medicine).
5. Details relating to contacts with, and consultations at, the pharmacy and surgery (About your GP surgery and pharmacy visits).

The MRPs were classified into the following categories using Gordon’s coding frame (Gordon et al., 2005):

1. ADRs and drug interactions.
2. Intentional non-compliance.
3. Cognitive, physical and sensory problems.
(4) Problems with non-prescription medicines.
(5) Drug-prescribing problems.
(6) Problems with monitoring and review of medicines.
(7) Lack of information or opportunity to discuss MRPs or concerns.
(8) Problems with process for obtaining repeat prescriptions through the surgery or the pharmacy.
(9) Problems with services from the surgery or the pharmacy.

For more detailed information about the questionnaire and coding frame please see Chapter 8.

Rationale behind choosing self-reported Morisky 8-item Medication Adherence Scale (MMAS) (2008)

The Morisky 8-item tool, which is a self-report tool, was selected in this research to evaluate the extent or rate of non-adherence to medication among South Asian and Middle Eastern patients in order to recommend the required intervention for improving adherence especially with the increasing need for long-term adherence to treatment. The MMAS questionnaire (English and Arabic versions) is available as Appendix 6.

Various self-report tools have been used for studying adherence behaviours and associated health beliefs and attitudes in both general and specific patient populations but there is no ‘gold standard’ measure of medication adherence (Kim et al., 2000). The most commonly used measure of medication adherence in the last 20 years is perhaps the 4-item original Morisky scale (Lichtenberg, 2010). The Morisky 4-item scale questionnaire was developed by Morisky and colleagues in 1986 to measure medicine-taking behaviour in hypertensive patients (Morisky et al., 1986). The measure has been found to have adequate internal consistency (α = 0.61), sensitivity (81%), and specificity (44%) but has shown poor psychometric properties (Morisky et al., 1986). Morisky and his colleagues (2008) created an expanded version (8-item) of this measure called the Morisky Medication Adherence Scale (MMAS). The additional items were added to better capture barriers surrounding adherence behaviour especially in that the new scale is able to
distinguish between intentional and unintentional non-adherence (Morisky et al., 2008). The tool was validated using a sample of 1367 low-socioeconomic status minority respondents with hypertension (mean age 52.5, SD 12.2 years). It was found that the MMAS was reliable (α = 0.83), sensitive (93%), and specific (53%) in detecting non-adherence with favourable psychometric properties (Morisky et al., 2008).

All questions on the 8-item MMAS are answered on a ‘yes’ or ‘no’ scale except question number 8 which is answered on a ‘Never/Rarely’, ‘Once in a while’, ‘Sometimes’, ‘Usually’ or ‘All the time’ scale. Each ‘no’ answer to items 1-7 receives a score of 0 and each ‘yes’ answer receives a score of 1. Question number 8, which asks participants to rate the difficulty remembering to take all their medicines is scored as follows (never/rarely = 0, once in a while = 1, sometimes = 2, usually = 3, all the time = 4). The coding instructions were given to the researcher as follows (Morisky et al., 2008):

- Items 1-4, 6, 7, 8 should be reversely coded as follows each ‘no’ answer receives a score of 1 and each ‘yes’ answer receives a score of 0 except question number 5 where a ‘no’ answer receives a score of 0 and a ‘yes’ answer receives a score of 1. Question number 8 is scored as follows (never/rarely = 4, once in a while = 3, sometimes = 2, usually = 1, all the time = 0). This was done to make the scale range from low to high scores being equivalent to low to high adherence.
- Item 8 was standardised by dividing this item by 4.
- The total scale ranges from 0 to 8.
- The MMAS scores can range from 0 to 8, which have been categorised as high, medium and low adherence (MMAS score of 8, 6 to <8, and <6, respectively).

The Morisky 8-item tool was selected for measuring adherence because it is a self-report method. The self-report is conducted by asking patients to self-report their medication-taking behaviour. Self-report assessments of patient adherence continue to be the most commonly used measure because they are quick, easy to administer, least equipment intensive, acceptable to patients, valid, reliable, can be used in large-scale studies, have the ability to distinguish between different types of
non-adherence, are inexpensive to obtain, and they can combine social, behavioural and situational factors involving revealing patterns of medicine use and what leads to non-compliance (Bosworth et al., 2006; Garfield et al., 2011). This measure is preferable because it is able to be administered in different ways, for instance, by post, by telephone, and face-to-face, and it is also suitable for both administration by an interviewer and for patient self-administration (Garfield et al. 2011). Self-report measures have proven to be effective and efficient in determining and estimating medication adherence compared to the other methods of measuring adherence to medication (Garber et al., 2004; Krousel-Wood et al., 2006).

Garber et al. (2004) reviewed the literature and evaluated the concordance of self-report measures (i.e., questionnaires, interviews or diaries) with non-self-report measures (i.e., administrative claims, plasma drug concentration, electronic monitors, pill counts or canister weight, or clinical opinion) of medication adherence. It was found that the concordance of self-report and other measures of medication adherence varies widely based on the type of measures used. Questionnaires and diaries tend to have moderate-to-high concordance with other measures of medication adherence. However, interview-based self-reports are not concordant with electronic measures. Questionnaire and diary methods could be preferable to interviews for self-reported medication adherence (Garber et al., 2004).

Stephenson et al. (1993) compared self-report with other measures of adherence by conducting a systematic review. The review illustrated that most non-adherent patients can be identified by asking them about their adherence. It showed that asking patients about their adherence would detect more than 50% of patients with low adherence, with a sensitivity and specificity of 55% and 87% respectively. It was reported that it is essential to take into consideration that even when patients admit missing doses during previous days or weeks still they tend to overestimate their adherence rate by an average of 17%. However, the authors concluded that questioning patients about their adherence is the most reliable and valid way of
measuring adherence in clinical practice (Stephenson et al., 1993). Thus, self-report was chosen as a measure for non-adherence/adherence in this research.

Despite all the benefits, there are a number of disadvantages to using self-report (Gochman, 1997; Vik et al. 2004). Firstly, patients may overestimate adherence or may underreport non-adherence. Secondly, self-report accuracy depends on the patient's cognitive abilities, social desirability and the honesty of his or her replies. Finally, using self-report to evaluate patients’ knowledge of the medications they have been prescribed and the dosing schedule provides little information as to whether the patient is adherent with the actual dosing schedule. However, it is believed that patients who report poor adherence to prescribed medications are likely to be telling the truth (Farmer, 1999; Haynes et al., 2002), which suggests that using this method may be helpful to reflect and detect true non-adherence, especially if it was used in conjunction with other available measures for assessing non-compliance, such as patient interviews. Using open questions during the patient interviews in a non-judgmental and non-threatening way, gives the participants the opportunity to give additional explanation about non-adherence (Farmer, 1999; Haynes et al., 2002).

The 8-item MMAS tool has been validated for clinical practice in a number of studies and has been used to evaluate medication adherence across a wide variety of health conditions including cardiovascular disease, asthma, diabetes, HIV, osteoporosis, and depression and has been shown to be generally correlated with other measures of adherence (O’Donohue and Levensky, 2006) such as pill counts (Haynes et al., 1980), pharmacy records (Fairley et al., 2005), electronic monitoring (Schroeder et al., 2006), blood pressure control (Fleece et al., 1988) and virological outcome (Haubrich et al., 1999). This tool is suitable for measuring adherence in primary care because it is generic and not disease specific and it is suitable for patients taking a single medication or multiple medications for different conditions. This tool also has good predictive validity, in that individuals who scored in the high adherence range had a considerably better treatment outcome than those scoring
in the low adherence range as measured by the Medication Adherence Questionnaire (Morisky et al., 2008). Although the Morisky Scale does illustrate the ability to predict medicine-taking behaviour as well as outcomes, it was not formed to describe a patient’s long-term continuation of therapy, which is considered to be an essential factor in the long-term management of chronic diseases.

The Medication Adherence Report Scale (MARS) (Horne, 1999) is another simple, valid and reliable tool for assessing adherence to medications. It has been used in several studies across a range of different illnesses (Barnes et al., 2004; Brown et al., 2005; Byrne et al., 2005; Grunfeld et al., 2005). The scale has been validated and showed favourable psychometric properties. In the validation study, the scale showed good internal reliability (0.67 to 0.90) when used across a range of diseases (asthma 0.83, diabetes 0.90, hypertension 0.67, and chronic pain 0.81). Two-week test-retest reliability was high (Pearson’s r=0.97, p<0.001). Concurrent validity was established by comparison of scores with another existing validated self-reported measure of adherence (Morisky et al., 1986) (Pearson’s r= 0.62, p<0.01). Construct validity was established by comparison with a validated measure of beliefs about medicines (Horne et al., 1999); higher levels of self-reported adherence were associated with stronger beliefs in the necessity of taking prescribed medications (r=0.33, p<0.01). Higher levels of self-reported adherence were negatively associated with stronger beliefs or concerns regarding taking prescribed medications (r=-0.30, p<0.01). Criterion related validity was established by assessment of blood pressure control among the hypertensive group; adherent patients showed better blood pressure control than those who were non-adherent (χ²=4.24; df=1; p<0.05). The scale had a higher internal reliability than an existing validated self-reported measure, as measured by Cronbach’s alpha (Morisky et al., 1986) (0.67 to 0.90 vs. 0.24, respectively).

Despite all the advantages, the MARS had the drawback of allowing for assessment of adherence on a continuous scale and not a dichotomous division into adherent/non-adherent categories. In addition, the MARS was shown to be less
useful for distinguishing the type of non-adherence (intentional/unintentional) compared to direct self-report (29% vs. 43% respectively) (Alhaddad., 2010). Furthermore, the MARS fared worse at identifying non-adherence compared to direct self-report. In Alhaddad’s study, simple direct questioning of patients about their last episode of non-adherence that occurred within the last week was practical for assessing non-adherence to medication and a useful indicator of the type of non-adherence patients had. With direct self-report participants have the freedom to report any reason for their non-adherence, which can then be categorised by the researcher as intentional/unintentional or continuous/contextual/one-off (Alhaddad, 2010).

Unlike MARS, which forced participants to rate five statements denoting non-adherence to medications and with the exception of the first item ‘I forget to take them’ which clearly denotes unintentional non-adherence, and the third item ‘I decide to miss a dose’ which clearly denotes intentional non-adherence, none of the other items can be clearly said to be describing intentional or unintentional non-adherence. For example: the item ‘I alter the dose’ seems to denote intentional non-adherence but may also denote unintentional non-adherence if participants had to alter the dose for reasons outside their control, e.g., if they misunderstood dosage instructions provided. A further example is in the item ‘I take less than instructed’. This item seems to denote intentional non-adherence but may also denote unintentional non-adherence if participants took less than instructed – for example, because lack of manual dexterity prevented them from opening the medication bottle, or due to forgetfulness, etc. (Alhaddad., 2010).

Non-adherers by direct self-report correlated better with non-adherence based on HbA1c levels than non-adherence based on MARS (kappa = 0.28 vs. kappa 0.24). When compared to HbA1c levels, direct self-report had a sensitivity of 48.5% for detecting non-adherence and a specificity of 93.3%, while MARS had a sensitivity of 34.4%, and a specificity of 93.8% (Alhaddad, 2010).
Lavsa et al. (2011) evaluated the literature describing medication adherence scales to identify what is the best tool in identifying non-adherence. The literature search revealed five medication adherence scales which were the Morisky Medication Adherence Scale (MMAS), the self-efficacy for Appropriate Medication Use Scale (SEAMS), the Brief Medication Questionnaire (BMQ), the Hill-Bone Scale, and the Medication Adherence Report Scale (MARS). They found that MMAS is the quickest to administer, is the simplest for clinicians to score, and has been validated in the broadest range of diseases and among people from different ethnic background, unlike the other tools. MARS and the Hill-Bone Scale are difficult to score. In addition, MARS focuses on psychiatric populations whereas the Hill-Bone Scale is specific to hypertensive patients (Lavsa et al., 2011).

On balance, as the 8-item self-report Morisky Medication Adherence Scale (MMAS) showed a good reliability and favourable psychometric properties and had been validated in a large patient population with chronic conditions, it was decided to use it for measuring participants’ adherence in the current study. The Morisky also had the advantage of allowing for assessment of adherence on a dichotomous division into adherent/non-adherent categories, which makes it easy to score, unlike MARS.

Other common in-direct methods for assessing patient adherence to medications behaviourally are pharmacy and medical records review, pill counts, electronic drug monitoring, directly observed therapy and clinician assessment. Although a pharmacy database review can provide useful information on the exact regimen prescribed, the amount of medication dispensed and the timing of refills, pharmacy records will not be used as a main indicator of assessing adherence in this research; rather, this method will be used to support the accuracy of the primary method of assessing adherence since reviewing the pharmacy records method tends to be a less sensitive measure and can be difficult to use with patients who go to more than one pharmacy to refill prescriptions. In addition, this method gives us an indication of whether the patients dispense their medicines on time from the community
pharmacy but it does not tell us what happens on a daily basis at their homes. Another problem with this way of monitoring adherence is that some of the pharmacies may not have electronic patient records but hand-written records and consequently there is a great possibility of missing some of the information and data. Moreover, this method requires patient consent for release of records so, if the patient refuses, data and information will not be accessible. Finally, in order for this method to be reliable and to provide an integrated analysis of patients’ adherence behaviours, it should be matched with the medical record at the GPs, which is not achievable in this research.

Pill counts involve measuring the amount of medication removed from the container (O’Donohue et al., 2005). For tablet and capsules, counting the number of pills is simple while non-unit-dosage formulations such as metered dose inhaler (MDI) and ointments, creams, gels, a change in weight of the carrier vessel can be used to indicate the number of doses used, but for many prescribed regimen this method is not available (O’Donohue et al., 2005). Although this method can be more objective than a report in that it does not rely on the patient’s memory of missed doses, for clinical use this method is limited by the requirements for patients to bring in all of their medications and for clinical staff to take the time to count the pills. Additionally, this method does not provide information about the patterns of adherence or non-adherence, for example timing of doses and when doses are missed. Moreover, increased chance of dispensing medication from the container before a visit may occur if the patient knows medications will be measured (O’Donohue et al., 2005).

Electronic monitoring devices record and store the date (and, for some devices, time) for each medication use and the data are transferred, using a communicator, to a computer for analysis (Myers and Midence, 1998). These devices are becoming more widely used (Myers and Midence, 1998). Electronic monitors are in most cases an objective, accurate and valid measure of adherence and, unlike the previously described measures, provide information on the pattern of medicine use.
However, this method is not without disadvantages. The opening of the container does not guarantee ingestion of the medication as the dose might simply be discarded and it does not account for the patient taking the appropriate number of pills (Horne et al., 2005). Ethically, patients have to be told in advance that their adherence behaviour is being monitored, with the risk that this might lead to temporary improvements in adherence as patients modify their behaviour to match the expectations of the observer (Horne et al., 2005). Moreover, electronic monitors cannot be fitted to many of the dosage forms and packaging used in routine care. Electronic monitoring is also expensive and it takes time to analyse data obtained and it does not provide information about the type of non-adherence (intentional or unintentional) (Horne et al., 2005).

In addition to face-to-face or telephone interviews and questionnaires, diaries are another self-report measure of assessing adherence. Logs or diaries can track multiple behaviours including medication taking, exercise (type, frequency, duration and intensity) and diet (type, quantity of food consumed) and are intended to be completed on a daily basis (O'Donohue and Levensky, 2006). They also can identify behavioural patterns and barriers. While daily diaries have high specificity for detecting treatment non-adherence, they suffer from problems of reliability and validity. Studies that compare written diaries to electronic monitoring show that diaries significantly overestimate adherence. In addition, patients can have difficulties in completing diaries and, as a result, there are often significant missing data or they are completed just prior to a clinic visit (O'Donohue and Levensky, 2006).

Direct measures for assessing medication non-adherence detect the presence of the drug in a person’s body using assays for the drug, its metabolite, or other biological markers in the urine, blood or other bodily fluids. Direct methods were not suitable to be used in this research because collecting serum, urine or blood samples to measure levels of a drug or its metabolites can be inconvenient and expensive for patients and, in addition, only a limited number of medicines can be
monitored by this way (Vermeire et al., 2001; Garfield et al., 2011). Direct measures are inappropriate for large samples and resources and are time consuming. A further disadvantage of using this method is that there is a great individual variation in drug absorption, the rate of excretion and metabolism, which makes it difficult to correlate drug concentration in urine or blood with adherence (O'Donohue et al., 2005; O'Donohue and Levensky, 2006). Moreover, the patients may take their medication as prescribed for a day or two before their appointment, leading to drug levels that suggest better adherence than is the case. The ability of the direct methods to identify non-adherence depend on the accuracy of the test and the degree to which the patient was non-adherent before the blood or urine sample was withdrawn. Direct observation is practical only in hospitalised patients, single-dose therapy and intermittent administration (O'Donohue et al., 2005; O'Donohue and Levensky, 2006).

**Rationale behind choosing the self-reported EuroQol EQ-5D-3L questionnaire**

Self-rated measures of health status and Health-related quality of life (HRQOL) capture the subjective evaluations of health and have been shown to be valid and surrogates for clinical outcomes. Numerous self-rated measures of health status/HRQOL have been developed, utilised and advocated by particular groups for different purposes. These instruments may be generic (non-disease-specific) or disease-specific. Generic instruments are designed to be applied across different populations and various types and severities of disease (Patrick and Deyo, 1989). Examples of various instruments available for the measurement of preference scores for current health comprise the EuroQol instrument, the Health Utilities Index Mark 2 (HUI2) or Mark 3 (HUI3), the Short form (SF-6D), the Quality of Well-Being Scale (QWB), the 15D and the Disability and Distress Index. The EuroQol instrument, the HUI2 and HUI3 are three of the currently most used prescored preference instruments. In fact, Rasanen et al. have reported that the EuroQol instrument is the most used of any instrument. All three tools share features of ease of use, for instance, high completion rates and the ability to be filled out in five
minutes or less, and they have been used to assess preferences for a wide variety of
diseases (Rasanen et al., 2006). Patients’ viewpoint of their health status is
increasingly used as an important outcome measure of the impact of disease and
the success of treatments.

The EuroQol EQ-5D is a simple non-disease-specific questionnaire for evaluating
and describing the HRQOL. This instrument was developed by a multi-centre, multi-
disciplinary and international group of researchers (EuroQol Group). It generates a
health profile as well as a single index score of health-related quality of life. It
consists of five items relating to current problems in the following dimensions:
mobility, self-care, usual activities, pain or discomfort, anxiety or depression.
Responses in each dimension are divided into three ordinal levels coded (1) no
problems, (2) moderate problems, (3) extreme problems. This part, called the EQ-
5D self-classifier, provides a five-dimensional description of health status, which can
be defined by a five-digit number. For example, the state ‘11223’ indicates no
problems in mobility and self-care but some problems with performing usual
activities and moderate pain or discomfort, and extreme anxiety or depression. The
EQ-5D self-classifier has also a visual analogue scale (EQ VAS) ranging from 0 ‘worst
imaginable health state’ to 100 ‘best imaginable health state’. The EQ VAS records
the participants’ self-rated health status on the day of the survey (EuroQol Group,
2009).

The reliability and validity of the questionnaire have been evaluated in various
diseases and different patient populations and acceptable results have been
obtained (Johnson et al., 1998; Johnson et al., 2000; Rabin and de Charro, 2001;
Pickard et al., 2007; Szende et al., 2007; Dyer et al., 2010; Herdman et al., 2011). In
addition, it was concluded in a review of the assessment of Quality of Life among
older people, where a number of instruments were evaluated, that there was a
good evidence for the validity, reliability and responsiveness of EQ-5D (Haywood et
al., 2005). Validated translations are available for more than 102 languages
including all South Asians and Middle Eastern languages. It has been used
frequently as an outcome measure in both clinical and healthcare services research. According to a recent systematic review, the EQ-5D is the most frequently used instrument to calculate quality-adjusted life years (Rasanen et al., 2006). Moreover, it is brief, acceptable for routine administration, and is being widely used in different countries by clinical researchers in a variety of clinical settings and a wide range of health conditions and treatments. It is designed for self-completion by participants and it is suitable for use in face-to-face interviews, telephone interviews or postal surveys (EuroQol Group, 2009).

There is, however, some evidence of limited sensitivity/responsiveness of the 3L to small changes in health especially with patients with milder conditions (Janssen et al., 2008). Thus, to improve the instrument’s sensitivity to small and medium health changes and reduce ceiling effects, the EuroQol group developed EQ-5D-5L by increasing the number of severity labels to five levels in each dimension. Preliminary studies of the 5L measure in terms of reduced ceiling and floor effects, increased reliability and improved ability to discriminate between different levels of health (Janssen et al., 2008). Despite the advantages of using EQ-5D-5L over EQ-5D-3L, it was decided to choose EQ-5D-3L to evaluate and assess health status for participants in this study because EQ-5D-5L is not available in all the languages that the participants in this study speak. In addition, EQ-5D-5L takes more time to fill out compared to EQ-5D-3L. Finally, dividing EQ-5D-5L into five levels – ‘no problems, slight, moderate, severe and unable to do’ – may make EQ-5D-5L more difficult to understand especially for ethnic groups that have clear language barriers.

Various detailed measures can be used to assess health-related quality of life such as SF-36, the Quality of Well-Being Scale (QWB), and the Health Utilities Index (HUI). Our aim in the present study was just to give a general indication about the broad health status of SA and ME populations to enable us to describe these populations and not to determine whether MRPs contribute to the quality of life – in which case we would have required a very detailed and sensitive measure. Thus, the EuroQol was used because it is brief, can give a general indication about the health status of
our populations and is available in the required languages. The EQ-5D-3L questionnaire is available as Appendix 7.

In summary, there are many different tools that were considered in the present study to explore MRPs, assess non-adherence to medications, and measure health status. Although there is still no gold standard MRPs questionnaire, 8-item MMAS and EQ-5D-3L tool were selected due to the advantages represented in Table 3-1.

Table 3-1: The tools that were selected in the current study to explore MRPs, assess non-adherence to medications, and measure health status respectively.

<table>
<thead>
<tr>
<th>Selected tools</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRPs questionnaire</td>
<td>• Short, easy to apply, valid and reliable;</td>
<td>• Has not been validated in SA and ME groups.</td>
</tr>
<tr>
<td></td>
<td>• Has been used in different settings and populations;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Can identify a wide range of MRPs and reasons behind the problems.</td>
<td></td>
</tr>
<tr>
<td>8-item Morisky Medication</td>
<td>• Most commonly used tool;</td>
<td>• May overestimate adherence or underestimate non-adherence.</td>
</tr>
<tr>
<td>Adherence Scale</td>
<td>• Valid and reliable in determining and estimating level of non-adherence;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Quick, easy to administer, acceptable to patients;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Able to be administered through post, telephone, face-to-face interviews;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Has been used in different settings, conditions and populations;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Available in different languages.</td>
<td></td>
</tr>
<tr>
<td>EuroQol EQ-5D</td>
<td>• Most commonly used as health economic assessment tool;</td>
<td>• Has limited sensitivity to small changes in health in patients with milder</td>
</tr>
<tr>
<td></td>
<td>• Simple, non-disease-specific for assessing general health;</td>
<td>conditions.</td>
</tr>
<tr>
<td></td>
<td>• Valid and reliable;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Has been used in different settings, conditions and populations;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Able to be administered through post, telephone, face-to-face interviews;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Available in different languages.</td>
<td></td>
</tr>
</tbody>
</table>
3.2 Methods

3.2.1 Study design

The study was conducted from January 2011 to June 2014. This was a cross-sectional study that took a mixed-method approach using qualitative and quantitative methods. The qualitative method included conducting semi-structured interviews with the patients from SA and ME origins in community pharmacies to identify MRPs from the patients’ perspective using an adapted version of the MRPs questionnaire from Gordon et al. (2005). The quantitative method involved administering questionnaires to measure the extent of non-adherence and general health status in South Asian and Middle Eastern patients using the Morisky Medication Adherence Scale (8-items MMAS) (Morisky et al., 2008) and EuroQol questionnaire (EQ-5D-3L) respectively (EuroQol Group, 2009). A retrospective review of pharmacy records which included Patient Medication Records (PMRs) and Medicine Use review reports (MUR) was also used to complement and validate the results obtained from the face-to-face interviews and to provide additional information on the MRPs identified. The data were collected from May 2012 to October 2012. Table 3-2 shows a summary of the methods used to the fulfil research objectives.
**Table 3-2: Summary of the methods used to fulfil the research objectives.**

<table>
<thead>
<tr>
<th>Research objectives</th>
<th>Methods</th>
<th>Outcome measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>To identify and categorise types of MRPs experienced by patients of SA and ME origins.</strong></td>
<td>(1) Semi-structured questionnaire using MRPs tool; (2) PMR and MUR review; (3) Thematic analysis using Gordon’s coding frame and Nvivo 10 software; (4) Statistical analysis using SPSS 21 software.</td>
<td>(1) Identifying and categorising MRPs; (2) Counting types and extent of MRPs.</td>
</tr>
<tr>
<td><strong>To identify factors that may contribute to MRPs.</strong></td>
<td>(1) Semi-structured questionnaire using MRPs tool; (2) Thematic analysis using Gordon’s coding frame and Nvivo 10 software. (3) Statistical analysis using SPSS 21.</td>
<td>(1) Identifying what are the possible reasons that may contribute to MRPs from patients’ perspectives.</td>
</tr>
<tr>
<td><strong>To offer a valuable tool that can be used in these populations as well as a revised coding frame.</strong></td>
<td>(1) Semi-structured questionnaire using original MRPs tool; (2) MRPs original coding frame.</td>
<td>(1) An adapted MRPs questionnaire and a revised coding frame to be used in SA and ME patients.</td>
</tr>
<tr>
<td><strong>To compare between SA and ME participants in this study.</strong></td>
<td>(1) Semi-structured questionnaire using MRPs tool; (2) Thematic analysis using Gordon’s coding frame and Nvivo 10 software. (3) Statistical analysis using SPSS 21 software.</td>
<td>(1) To describe differences between SA and ME participants in this study.</td>
</tr>
<tr>
<td><strong>To evaluate the extent of non-adherence to medications.</strong></td>
<td>(1) 8-item MMAS. (2) Statistical analysis using SPSS 21 software.</td>
<td>(1) Counting extent of non-adherence.</td>
</tr>
<tr>
<td><strong>To suggest recommendations to support patients in their use of medicines.</strong></td>
<td>(1) From patients’ and pharmacists’ perspectives; (2) From researcher’s perspective; (3) Existing literature.</td>
<td>(1) Suggesting strategies to identify, correct and prevent MRPs.</td>
</tr>
<tr>
<td><strong>To validate the results and address these problems among SA and ME patients</strong></td>
<td>(1) Commencing pharmacists’ Interview informed from patients’ interview to examine their perspectives on MRPs identified and recommendations made.</td>
<td>(1) Valid results and applicable recommendations.</td>
</tr>
</tbody>
</table>

**3.2.2 Study setting**

The study was conducted in community pharmacies located in the following areas of London: Camden, Brent, Harrow and Westminster. Camden, Brent, Harrow, and Westminster PCTs were chosen as sites for this study because they provided a rich sample of patients from these communities, which may have important implications for the identification of a wide range of MRPs and needs (DoH, 2009; Brent PNA, 2011; Camden PNA, 2011; Harrow PNA; Westminster PNA, 2011). In addition, most
of the areas in these wards were highly deprived, and when people live in areas with high levels of deprivation they tend to have inequalities in health, multiple long-term conditions, and difficulties in accessing the healthcare services and possibly in using their medicines (DoH, 2009; Brent PNA, 2011; Camden PNA, 2011; Harrow PNA; Westminster PNA, 2011).

Brent and Harrow were two of only three boroughs in England where, for the first time, the number of EMGs exceeded the White groups (GLA, 2010). In 2011, Brent had the second highest percentages of EMGs (59.2%) and Harrow had the third highest proportions of EMGs (53.7%). Table 3-3 illustrates the number of SAs and other ethnic groups in Camden, Brent, Harrow and Westminster boroughs according to the Greater London Authority 2011 (GLA, 2011).

Table 3-3: The number of SAs and Other ethnic groups in Camden, Brent, Harrow and Westminster boroughs according to the Greater London Authority 2011 (GLA, 2011).

<table>
<thead>
<tr>
<th>Borough</th>
<th>Total population</th>
<th>Indian</th>
<th>Pakistani</th>
<th>Bangladeshi</th>
<th>Other SAs</th>
<th>Other ethnic groups</th>
<th>Total EMGs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camden</td>
<td>212,200</td>
<td>6,200</td>
<td>1,400</td>
<td>15,000</td>
<td>4,600</td>
<td>11,400</td>
<td>29.9%</td>
</tr>
<tr>
<td>Westminster</td>
<td>219,000</td>
<td>9,700</td>
<td>2,300</td>
<td>5,300</td>
<td>7,400</td>
<td>16,200</td>
<td>29%</td>
</tr>
<tr>
<td>Brent</td>
<td>279,700</td>
<td>55,000</td>
<td>12,600</td>
<td>1,100</td>
<td>18,600</td>
<td>13,000</td>
<td>59.2%</td>
</tr>
<tr>
<td>Harrow</td>
<td>218,700</td>
<td>60,100</td>
<td>6,000</td>
<td>1,100</td>
<td>19,400</td>
<td>9,000</td>
<td>53.7%</td>
</tr>
</tbody>
</table>

Having described the health authorities that were selected for this study, the next step was to decide the most appropriate setting to conduct the study. The primary care setting, and in particular community pharmacies, was the most appropriate for conducting this study. According to the DoH (2008) “primary care is the term for the health services that play a central role in the local community” (DoH, 2008). In the UK about 75% of all prescribed items are ‘repeats’. Repeats are items that can be issued without the patient seeing a doctor. As a result, patients are more likely to experience MRPs in primary care.

The reason for choosing community pharmacies as research sites is because the community pharmacy is the place the patients go to in order to collect their medicines. On balance, the community pharmacy sites are well placed to address
and identify MRPs and they can provide this research study with primary care patients who could be accessed on a daily basis, especially as they may not have such a heavy workload as the GPs may have, and they usually have a private consultation room which allows the semi-structured interview to take place, in a quiet, confidential and peaceful environment.

3.2.3 Study sample

Sampling strategy

The present study aimed at accessing people of SA and ME origins who were using medications. Therefore, there were two stages of sampling strategy. Firstly, sampling strategy of pharmacies, and secondly sampling strategy of patients within the pharmacies. The study required face-to-face interviews with SA and ME groups in community pharmacies. Therefore, we purposively selected a number of pharmacies and then, due to low response rate, those who agreed to take part (n=7) self-selected and were approached. As regards sampling strategy of patients, a purposive sample of patients that met the inclusion criteria was sought at the beginning and then, we approached everybody who met the inclusion criteria and, finally, those who agreed to take part were approached.

Eligibility criteria

A purposive sample of patients was sought based on inclusion and exclusion criteria as follows:

Inclusion criteria:

- Patients whose ancestries were from a South Asian or Middle Eastern background, irrespective of their place of birth. South Asian background included Indian, Pakistani, Bangladeshi or any other South Asian background whereas Middle Eastern background included Arab, Iranian, Turkish or any other Middle Eastern background. Patients were identified by visual inspection of forename and surname together and outward appearance, and ethnic identity was confirmed by the patient later on.
- Patients on multiple medicines (i.e., prescribed three or more regular medicines for chronic diseases).
Patients who were willing to take part and signed a consent form.

Patients aged 18 years old or above (no parental consent required).

Patients who spoke the following languages: English or Arabic. Those who could not speak any of these languages were also included through utilising a routine practice used by community pharmacists who provided services for South Asian and Middle Eastern patients who did not speak English. This involved a community pharmacist or other pharmacy staff who assisted in communicating with the patient during the interview. Where translation or interpretation was required, the interviews were validated by the research team which included speakers of Arabic, Farsi, Panjabi, Hindi and Urdu. This was done by playing back a sample of audio-recorded interviews to the research team member who spoke the same language as the patient.

Exclusion criteria:

- Patients who disagreed to take part.
- Patients who had a clear language barrier.

The reason behind focusing on the South Asian group in particular was because people from the Indian subcontinent tend to perceive themselves as less healthy than those in the general UK population (NHS Health and Social Care Information Centre, 2005). In addition, South Asians now represent the UK’s largest minority ethnic grouping (ONS, 2004). Half of the total minority population was South Asian, 25% were African Caribbean and 15% were Mixed origin (ONS, 2004). Between 2006 and 2031 the largest percentage of ethnic minority group increases are projected to be in the Chinese, Bangladeshi and Pakistani ethnic groups, which are expected to increase by 55%, 51% and 50% respectively (GLA, 2010). In fact, during the same period, the highest increase of Ethnic Minority groups is projected to be in the ‘Other’ ethnic group by 79% (GLA, 2010). The ‘Other’ ethnic category in the Census form was not broken down to determine which specific ethnic groups it includes and also there was no tick-box for the Middle Eastern groups on the Census form; therefore, it is more likely that the Middle Eastern groups fall into the ‘Other’ category especially because of political instability in the Middle East, which may increase percentage of immigration to the UK among these groups. There was also a further reason behind choosing Middle Eastern groups which is because
these groups are relatively new to the British society and very little is known about what influences the medicine-related problems among these groups.

Sample size

The researcher determined sample size when no new topics, themes and issues emerged from the interviews. If no new issue emerged, then a decision was made to stop the interview because saturation was reached. This was reached by 80 interviews. However, issues of availability and willingness of subjects to take part in the study also affected the sample size.

Sample recruitment

Patients for this study were recruited through community pharmacies. Therefore, there was a two stage recruitment process: (1) recruitment of community pharmacy sites and (2) recruitment of patients from the community pharmacies.

Recruitment of community pharmacies

The PCT in Camden, Brent, Harrow, and Westminster were asked to provide the researcher with a list of community pharmacies located in their areas. The PCTs provided a list of the names, address and telephone numbers of all community pharmacies from their databases.

From the list obtained, all the community pharmacies located in Camden, Brent, Harrow and Westminster boroughs were invited to participate in this study if they met the following criteria:

- Pharmacies located in wards or areas which had a higher percentage of residents of SA and MEs ethnicities than the national average (i.e., 17.6% - 75.5%). This information was taken from the Office for National Statistics 2001 (ONS, 2004).
- Pharmacies located in the most deprived areas in these boroughs (i.e., fifth in lower super output areas – LSOAs) and more deprived areas than the borough’s average (i.e., fourth in lower super output areas). This information was taken from the Office for National Statistics 2010 (ONS, 2010).
Pharmacies conducting Medicine Use Review (MUR), and thus having a private consultation room.

• Pharmacies that were willing to collaborate and participate.

The level of deprivation in Camden, Brent, Harrow, and Westminster boroughs was assessed using the National Index of Multiple Deprivation (IMD) which provides a comparative measure of the deprivation experienced by a population based on a basket of indicators which are combined to form the overall index. These indicators include poverty, unemployment, poor housing, lower educational attainment, environmental factors and others. The index provides a score for each output area and ranks areas relative to each other. The scores range from 1 to 5, and the higher score indicates a high level of deprivation (ONS, 2010).

All those eligible pharmacies (n=94) were invited to take part in the study by sending an invitation letter and a summary of the research study. The invitation letter included a brief description of the study's aim and objectives, study procedures, how they would contribute and what they needed to do. It also involved contact details of the research team and a reply slip with a pre-paid envelope for return to the researcher. A sample of the invitation letter and a summary of the study provided to the community pharmacists are attached as Appendix 8 and Appendix 9 respectively.

Then, the postal invitation was followed up after two weeks by telephone. A personal visit was also made two weeks after the telephone follow-up to those pharmacies that did not provide an answer regarding whether to take part or not after being contacted by letter and telephone.

Once the community pharmacies agreed to participate, a letter was sent by the researcher to thank them for responding (Appendix 10). After that, they were contacted by the researcher to arrange a visit to the responding pharmacies in order to discuss the study in more detail.
Recruitment of patients

Patients’ recruitment was carried out by two methods in each pharmacy:

1. **Reviewing Medicine Use Review (MUR) reports and Patient Medication Records (PMRs) in the pharmacy**: the community pharmacists did a retrospective review of MUR reports and PMRs over the previous six months to identify eligible patients. Once eligible participants were identified, the researcher invited them to take part by post. Each patient was provided with a prepared information pack which included an invitation letter signed by a pharmacist, a reply slip with a pre-paid envelope and a patient information sheet explaining: the purpose of the study, study procedures and how the study will be conducted, possible disadvantages and benefits from participating, confidentiality of the data, and the researcher’s contact details. If patients wished to take part, they were requested to return the reply slip in the pre-paid envelope provided to the researcher’s address or alternatively, if they required further information, they could email or phone the researcher. Adequate time duration (i.e., three weeks) was given to the patients to consider whether or not they wished to take part in the study. Patients who returned the reply slip were contacted by the researcher and a date and time were arranged for the semi-structured interview. A follow-up letter was sent to non-responders to remind them to take part. This was done after three weeks of sending the initial invitation letter and prepared information pack.

2. **Direct approach**: Pharmacists, who were local and tended to know patients, identified eligible patients by looking at prescription and PMR record and they also used names as well as appearance to ensure that no eligible possible participants were missed from the study. The pharmacists approached eligible patients directly when they came to the pharmacy (e.g., for a prescription, OTC, consultation) and invited them to take part. Regular patients, who were known by the pharmacists to take three or more regular medicines, but presented with a prescription for a non-regular medicine or less than three regular medicines, were also invited to take part. Eligible patients were approached by the pharmacist before or after the pharmacist dispensed their medicines. When the pharmacist was busy, the researcher approached and invited certain patients after being told by the pharmacist that these patients were eligible. When the researcher was busy interviewing a patient and during the less busy sessions in the pharmacy, the pharmacist approached and invited other patients who came to the pharmacy to take part in the study. If patients agreed, they were referred to the researcher who provided a full explanation of the study both, orally and with a patient information sheet, and obtained informed verbal and written consents prior to commencing the interview. After obtaining informed consent, the interviews were conducted. Patient Invitation Letter, Patient
Information Sheet and Patient Consent Form are attached as Appendix 11, Appendix 12 and Appendix 13 respectively.

If patients did not agree to participate in the study, they were asked if they did not mind giving a reason for declining. The total number of recruits and the number of respondents and non-respondents were documented.

**Data collection**

From May 2012 to October 2012, a one-day visit from 9 a.m. to 5 p.m. every two weeks to each pharmacy was conducted to recruit and interview eligible patients. The interview took place in the community pharmacy consultation room or outside the consultation room and was conducted by the researcher. Before commencing the interview, the participants were given five minutes to read the patient information sheet, ask any question and sign the consent form. The researcher went through the information sheet and consent form with some participants who could not read or understand English. After that, the participants were assured by the researcher that there were no wrong or right answers and that the participants’ perspectives were the main interest of this study. The researcher emphasised that all the information that the participants would provide or any other information that the researcher would obtain about their medicines from the pharmacy records would be treated as strictly confidential and their participation would not affect the quality of care they received from healthcare professionals. Finally, the researcher reminded the participants that they could withdraw at any time and that the interview would be audio-recorded and their medication records held at the pharmacy would be looked at as a part of this study. Where patients disagreed with having their interview recorded, only hand-written notes were taken by the researcher.

After giving their informed consent (verbal and written), an eligible patient was interviewed face-to-face by using three tools. The tools that were used were ones that have been used in previous studies and have been validated. These validated tools were:
• Adapted version of the medicine-related problems questionnaire (Gordon et al., 2005).
• Morisky 8-item tool (Morisky et al., 2008).
• EuroQol (EQ-5D-3L) questionnaire (EuroQol Group, 2009).

Each interview took between 15 and 45 minutes and was conducted in one session. After completion of each interview, the researcher accessed the participants’ records in order to review MUR and PMR records. The medicine information on each participant’s record was documented using a form. The results obtained from MUR records, PMRs in the pharmacy and semi-structured interview were analysed and MRPs identified were categorised using Gordon’s MRPs coding frame (2005).

An expert panel consisting of three pharmacists was invited to make a final decision on the presence of a MRP and to assess the MRP categories. This was done by preparing a case summary or vignette (i.e., a short illustrative narrative or story connected with the topic under investigation) using information from pharmacy records and the semi-structured interview. Case vignettes enabled pharmacists to review individual cases with an MRP effectively and categorise MRPs identified. The expert panel was asked to tick whether they agreed or disagreed with the category within which each MRP was placed. The pharmacists reviewed only 10% of the patients and they were verbally thanked for their contribution to the study. The pharmacists reviewed only 10% of cases because it is unlikely that the researcher, who detected and classified the MRPs correctly for 10% of the cases, will not be able to identify and classify the MRPs correctly for the rest of the cases. A flow chart of the design of the main study is illustrated in Figure 3-1.
A list of community pharmacies located in these PCTs was provided, where all eligible community pharmacies were invited to take part.

The 7 pharmacies that agreed to take part were contacted by the researcher to recruit patients.

Patients were recruited by two methods in each pharmacy:

- Retrospective review of MRPs and MUR reports in pharmacy by pharmacists
- Direct approach by pharmacists and researcher

Consent was obtained:
- Semi-structured interview was conducted by the researcher using MRPs tool and 8-item MMAS and EQ-5D-3L in the community pharmacy

Consent was not obtained:
- The researcher reviewed MUR reports and PMRs in the pharmacy

Figure 3-1: A flow chart of the design of the main study.
3.2.4 Translation of the instruments and transcripts

Translation of the instruments

The researcher conducted the interviews in English or Arabic according to the participant’s preference. In the current study, the questionnaire’s source language was English and the target was English and Arabic languages. The Arabic version of the MMAS and EQ-5D-3L questionnaire was provided by their authors. The MRPs questionnaire was translated and validated through a three-stage process of questionnaire validation. This process involved translation, group validation and post-validation of the questionnaire as follows:

a) The translation stage: the MRPs questionnaire was translated using a parallel blind technique which involves translation of the instrument into the target language (i.e., Arabic) by two translators (F.A. and F.K.) independently. Both translators are native speakers of Arabic and proficient in English, have health-related postgraduate qualifications and research interviewing experience as well as being professionally trained and familiar with the concepts being examined in the study. The translation process consisted of the following:

- Translations for individual items were compared with one another.
- If translations were identical or nearly identical in such a way that caused no disagreement between the two translators, the item was accepted immediately.
- In case of disagreement between translators regarding an item, they discussed their individual points of view of why an item should be translated in their suggested way. Preserving the meaning of the original English item was the aim and the decisive factor in reaching an agreement about a particular item.
- If one translator accepted the point of view of the other, the translation of the latter was accepted and used.
- If not, the translators suggested alternative translations of the item, and discussed their views in the same way described above until agreement was reached and differences were resolved.
This method had the benefit of speed and practicality as the two translators worked in parallel rather than in sequence. In addition, this method has the element of security as it allows checking of the work of both translators and therefore comparing between the two drafts to increase the confidence in the accuracy of the translation (Behling and Law, 2000). Only a few spelling mistakes and grammatical amendments were required when discrepancies were identified.

b) The group validation stage: a group of native Arabic speakers was formed consisting of the researcher, a researcher pharmacist and a clinical pharmacist to review and critique the translated tool. The MRPs questionnaire was assessed by answering the following:

- Explain your understanding of the meaning of each question in the translated questionnaire.
- Compare these meanings with the original English version and discuss and comment on the equivalence (is it the same?)
- Suggest alternative translation if it is felt that the translation is not suitably accurate.
- Is the translation culturally appropriate in Arabic and does it make sense?

The questionnaire was amended after the suggestions and comments of the group validation and was ready for the next stage.

c) The post validation stage: to enhance the quality of translation, the random probe technique was used (Behling and Law, 2000). This was done by administering the final version of the target language questionnaire after the group validation stage, to a group of target language speakers (n=3) who were asked to explain what they understood from each translated question and why they responded as they did to each individual item. They were also asked to comment on the questionnaire in general including layout, wording, ease of understanding, and ambiguities, etc. In addition, they were also requested to recommend a better way of expressing these items and give any comments on the content. Those people were native speakers of Arabic with no knowledge about the concepts being examined in the study. No changes or amendments were made after post-validation.
The MRPs tool was adapted and amended in line with the recommendations after the group validation stage (Gordon et al., 2005). This involved changing the following points in the questionnaire:

1. Research participants’ demographic details were moved from section 2 (at the beginning) in the original tool to a separate sheet in the adapted version. The demographic details were asked at the end of the interview. This was done to allow the researcher to collect the most important information and data regarding medicine use and service access at the beginning of the interview from participants who may not complete the interview.

2. In the demographic details sheet, the question regarding country of birth was changed to include only ‘the UK’ or ‘other’. The ethnic group question was also modified to involve only people from ‘South Asian’ or ‘Middle Eastern’ background. Questions about main language, religion, qualification and current employment status were added to the demographic details sheet.

3. Additional prompts were added to question 3, section 1. Prompts were as follows: ordering or collecting your prescription from the surgery, ordering or collecting your prescription from the pharmacy, opening containers, reading labels, understanding or reading information, obtaining information, administration (e.g., breaking tablets, measuring, putting in eye drops, etc), advice on when to take or how much (especially for as needed medicines - prn), advice on need for medicines and/or on side effects, buying medication or other remedies for yourself, other, please describe). These prompts were added in order to identify in which way these patients have been supported (i.e., type of support they receive, by whom and how often).

4. Two questions were added to section 5; these were: ‘How well does the service at your local pharmacy works for you?’, and ‘Is there anything you think that your doctor, pharmacist or nurse could do more to help you better manage your medicines?’

5. The following question: ‘Which GP surgery and GP do you usually go to and consult?’ was moved from the beginning of the questionnaire to the end because it was not considered as important as the other questions at the beginning.

6. Some grammatical changes were made to the translated version without changing the underlying concepts and some spelling mistakes were amended.

**Translation of the transcripts**

The interviews were digitally recorded and transcribed verbatim by the researcher in the participant’s language that was used during the interview. This was done in
order to produce initial verbatim transcripts. If some participants provided further information after the recorder was switched off, hand-written notes were made by the researcher as soon as the participants had left. All the extra field notes were included in the transcripts, which were then ready for translation and analysis.

The translation process of the Arabic transcripts into English involved the following:

- Reviewing 10% of the Arabic audio-records by another bilingual person (F.K.) in order to check the accuracy of the initial Arabic transcripts produced by the researcher. F.K. reviewed only 10% of Arabic audio-records because it is unlikely that the researcher, who correctly translated 10% of the cases, will not be able to correctly translate the rest of the cases.
- Translating 10% of the Arabic transcripts into English simultaneously and independently by the researcher and the second bilingual person (F.K.) to ensure validity of translation and to allow the true meaning of the participant’s experience to be properly conveyed in the English language (Lopez et al., 2008).
- Comparing the two translations and resolving all inconsistencies by discussion and generating a final version from each transcript. The few amendments that were required were mostly a few spelling mistakes and grammatical amendments which, for example, involved changes in tense and plurality of words but the underlying concepts remained intact.
- Thematic coding and analysis of the data by the researcher using Gordon’s coding frame and Nvivo 10 software.

Some qualitative studies which were conducted in another language directly transcribed the interview data into English, instead of transcribing it in the local language and then translating it (Kapborga and Bertero, 2002; Pitchforth and Van Teijlingen, 2005). Direct transcribing into English has the possibility that interpreter bias may occur (Lopez et al., 2008). Twinn (1998) suggested that qualitative data should be transcribed in the participants’ original language in order to reduce the difficulties associated with the translation and interpretation of verbatim data (Twinn, 1998). Pitchforth and Van Teijlingen (2005) conducted a study with Bangladeshi women who had recently used emergency obstetric care and had limited formal education. Pitchforth and Van Teijlingen worked with a lay interpreter who conducted the interviews. The interpreter was not professionally trained but she had trained and worked with the research team for six months and
had research interviewing experience. The interviews were translated directly into English by the interpreter. Pitchforth and Van Teijlingen arranged for an independent bilingual interpreter to transcribe four interviews into English for quality assurance purposes. The review of the two transcripts revealed that the interpreter did not translate the Bangladeshi women’s responses but interpreted the data. In addition, the level of detail which was provided by the interpreter was markedly different from that of the independent bilingual interpreter. She omitted many details, which led to loss of some insights into the experiences and views of Bangladeshi women. Thus, in this study the interviews, which were conducted in Arabic, were directly transcribed into Arabic and then translated into English.

3.2.5 Data analysis

In the analysis, the qualitative and quantitative procedures were applied to achieve the study objectives. The quantitative analysis was employed to describe the study population whereas the qualitative analysis was applied to explore people’s own perspective of MRPs, to explain how they might arise and to describe reasons that may contribute to MRPs.

Quantitative Data Analytical procedures

*Preparation and coding of quantitative data*

Before data analysis, the data from MRPs face-to-face semi-structured interviews and the pharmacies’ review were coded in accordance with Gordon’s coding frame (deductively). Gordon’s coding frame (Appendix 14) consists of nine main broad themes plus a number of sub-themes under each main theme. When a new problem, sub-code or sub-theme emerged from participant’s discussion and was not included in Gordon’s coding frame, it was added to the most appropriate category or theme in Gordon’s coding frame (inductively) and all the previous transcripts were checked for the relevance of this new code to ensure consistency and thoroughness of coding. Any theme that did not fit a pattern in the coding frame was analysed separately. Thematic content analysis was used to develop the
coding scheme in this study. Thematic content analysis is a multistep procedure that can be performed inductively, deductively or both (Boyatzis, 1998). The data were then transferred into SPSS version 20.

In Gordon’s coding frame, each MRP was given a three-digit code. The first digit related to the category within which the MRP was placed, with numbers from 1-9. The second and third digits related to its position within the category.

**Data entry**

The data were entered in groups of variables as they appeared in sections on the interview schedules and assessment form. The data were checked for errors in two ways during the data entry. First, when codes for each variable were entered for each case, the data entered for previous variables were checked against the original information. Second, after entering a group of variables, SPSS frequency and descriptive statistics were run on each variable to review minimum and maximum values, mean, median and range. Data checking was also carried out after data entry was completed. Missing values, shown by blank cells, were examined against original data to identify any inconsistencies. Variables from approximately three cases from each pharmacy were then reviewed with the original data from the interviews to identify any discrepancies.

**Quantitative data analysis**

Quantitative data were analysed using the Statistical Package for the Social Sciences (SPSS) version 21 for Windows® to report descriptive statistics. Numerical data were intended to indicate the extent to which problems were common among respondents. Descriptive procedures were used to characterise and summarise the data set. Summary stats and cross-tabulation procedures were used to describe the characteristics of participants, compare characteristics of respondents and non-respondents, and compare characteristics of participants who had more or less MRPs. A p value equal to or less than 0.05 was considered as conferring statistical significance. All statistical tests were two-sided. Descriptive statistics included
frequencies, means/standard deviations, medians/interquartile ranges as appropriate based on measurement level and distribution of the variable. T-test, Chi-square test and Mann Whitney test were used for the descriptive analysis. Statistical significance was set at 0.05.

Continuous data were illustrated as the mean (standard deviation [SD]) and median (inter-quartile range [IQR]). The mean measures the centre of symmetric data whereas median measures the centre of non-symmetric (skewed) data. Standard deviation (SD) was used to measure the variability of data and the level of spread around the mean. Inter-quartile range (IQR) (i.e., 25-75th centile values) was used to measure the variability of data and the level of spread around the median. Categorical data were demonstrated as percentages (proportions) of participants belonging to different categories for each variable. Normality of distribution of data was assessed by producing histograms to visualise the shape of normal curve and by producing the normal probability plots (Q-Q plot). Histograms and normal probability plots are easy to interpret, even with a small number of participants.

Differences between two independent samples were assessed using the t-test or Mann-Whitney U test. The t-test is a parametric test that assumes that the sample under analysis is from a population with a specific normal distribution, unlike non-parametric tests. The independent samples t-test measures the differences between the means using the SD. The t-test was chosen over a non-parametric test if there was a normal distribution with no marked skewness. If the distribution was skewed, the non-parametric (non-normal) Mann-Whitney U test was used. The Mann-Whitney U test makes no assumptions about the underlying distribution or the normality of the data.

The chi-square test organises two or more categorical variables in a contingency table. The formula is based on the assumption that the variables are independent. The Pearson’s chi-square ($\chi^2$) test was used to look for an association and to test whether the distribution of frequencies among the categories of one variable is independent of their distribution among the categories of the other variable. It
works by comparing the expected frequency in each cell of a 2x2 table with the observed result. For the 2x2 table, the chi-square test is valid when the total sample size is greater than 20 and if the expected frequencies for each cell of the 2x2 table are greater than five. In a case where the total sample size is 20 or less and if the expected frequencies for each cell of the 2x2 table are less than five, the Fisher’s exact test was used instead.

Qualitative Data Analytical procedures

Preparation and coding of qualitative data

The qualitative data from the interviews were transcribed to produce typewritten data. Different approaches have been identified previously by researchers to analyse qualitative data (Ritchie and Spencer, 1994). In the current study, a thematic framework technique was used as a method for analysing qualitative data. Framework analysis was developed in the 1980s by researcher at the UK National Centre for Social Research particularly for policy or applied research in which the information requirement is known in advance (Ritchie and Spencer, 1994). Framework analysis is good at dealing with research that has specific questions, a limited time-frame, a predefined sample and ‘priori’ issues that need to be addressed. Although it may generate theories, the main goal of using it is to describe and interpret what is happening in a particular setting (Ritchie and Spencer, 1994).

This analytical approach develops a thematic framework, which is used to classify and organise data according to themes, concepts and emergent categories. The framework identifies a series of main themes that can be further subdivided into related sub-themes. Each main theme is charted by completing a matrix (table) where each individual case has its own row and columns that represent the sub-themes. The cells of the matrix contain relevant summaries from the data set and the charts can then be used to examine the data for patterns and connections.
In pharmacy practice and policy and in particular in the area of MRPs, thematic content analysis has been used to understand the meanings assigned to MRPs from perspectives, behaviours, experiences and feelings of individuals in order to identify how individuals may be supported in the use of their medicines (Gordon et al., 2007; Sidi et al., 2009; Opara et al., 2010). It has been used because it allows inclusion of prior identified themes or concepts from previous literature as well as other themes or concepts that emerge during the coding process. In addition, it follows a well-defined procedure, which makes it possible for others to rework and reconsider ideas precisely since the analytical process is accessible, as it has been documented.

Ritchie and Spencer (1994) identified six advantages for framework analysis as follows:

- “It is generative or grounded: it is heavily based on, and driven by, the original accounts and observations of the people it is about.
- It is dynamic: it is open to change, addition and amendment throughout the analytic process.
- It is systematic: it allows mechanical treatment of all similar units of data.
- Enables easy retrieval: it allows access to, and retrieval of, the original textual material.
- Allows between and within case-analysis: it enables comparisons between, and associations within cases to be made.
- Accessible to others: the analytic process, and the interpretations derived from it, can be viewed and judged by people other than the primary analyst.”

The analysis process of the thematic approach comprises five different stages (Ritchie and Spencer, 1994). The first stage is to understand the data by reading and re-reading the text to gain an overview of richness, diversity and depth of these data. The next stage is to focus on the analysis by reviewing the purpose of the evaluation and how the data will be presented. The third step is to identify a thematic framework by developing sub-codes or sub-categories from both pre-existing and emerging problems and organising them into coherent codes or categories. The fourth stage is to identify patterns and connections within and
between categories. The final stage is interpretation and bringing it all together by putting together key characteristics of data and mapping and interpreting data as a whole in order to address the key objectives of the research study (Ritchie and Spencer, 1994).

Qualitative data analysis

The following procedure was followed by the researcher when analysing the data. The data were processed and verbatim transcriptions of the patients’ interviews were made. The researcher read each interview transcript thoroughly to enable her to gain a sense of the whole experience for each respondent and be able to identify descriptions of experiences and themes within the data. Each response to a question was independently analysed and each patient’s responses to a particular question grouped together and reanalysed. The data were analysed thematically using Gordon’s coding frame. By analysing each section of the interview transcripts independently the researcher was able to identify the clear intention of a respondent’s answers to the interview questions and thus to draw out underlying meaning of the responses.

Verbatim quotations were taken from the interview transcripts and used to illustrate the results. The quotations are use to confirm that the researcher’s interpretation of the data was based on evidence and was not impressionistic.

Nvivo is a qualitative data analysis computer software package produced by QSR International (Silver and Lewins, 2010). Nvivo provides a range of tools for integration, organisation, exploration and interpretation of rich data records and information. This software was used in this study to (Silver and Lewins, 2010):

- Integrate data: by sources, data storage and data preparation and importing data.
- Organise data: by folders, collections, classifications and attributes.
- Explore data: by annotating text, searching text and querying word frequency.
- Interpret data: by annotating codes, using memos, sets and models.
Chapter 3 – Research context and methodology

- Interrogate data: retrieving data by opening a code, text search, matrix queries.

Nvivo 10 software has advantages over the other qualitative softwares because it does the following (Silver and Lewins, 2010):

- Allows the importation of additional audio and video file format.
- Allows social media data (e.g., from Facebook, LinkedIn and Twitter) to be imported.
- Allows web pages captured using NCapture to be imported as PDFs.
- Enables the content of source material and memos to be spell checked.
- Includes new reports which summarise coding (i.e., includes coded content as well as summary frequency information).
- Analyses both numerical and non-numerical data.
- Accommodates a wide range of research methods such as literature review.

3.2.6 Reliability of the results

Reliability refers to the extent to which the study findings obtained are reproducible (Smith, 2002). As argued by Yin (1989), reliability is achieved if the same procedures lead to the same conclusions when repeated. In this study, detailed information has been presented regarding the method of data collection, sampling procure, sample recruitment, and data analysis. From this information, the study could be reproduced and therefore shown to be reliable. However, this piece of work is essentially naturalistic and as such explores the thoughts, feelings and opinions of respondents at one point of time. In essence, this means that the same questions asked of the same people at varying times may elicit different answers. This is what is expected. The reliability of the study therefore lies in the reproducibility of the results and assumption that if the data were collected using identical techniques at exactly the same point in time the same results would be obtained, and if the data were analysed using the documented method of data analysis the same conclusions to the study would be drawn.

To ensure the reliability of the data collected during the interview and the administration of the tools and the collection of pharmacy records, the following steps were undertaken by the researcher:
Chapter 3 – Research context and methodology

- The data collection process was clearly documented and research procedures were followed as per the data collection protocol during the research process.
- A semi-structured interview technique was employed using prepared interview questions, including prompts and probes, to ensure respondents were invited to consider the same topics.
- Only one researcher was involved in data collection and the interview guide was closely followed to reduce any possibility of bias and to eliminate any inconsistencies in the procedures.
- These interviews were audio-recorded and at least 10% of them were checked for reliability by the expert panel. In order to simplify the assessment of the reliability of the MRPs categories, the second and the third digits of the MRPs codes were removed, leaving the first number of the code, which was the category number (from 1-9). The data relating to medicine, recruitment, interviews, patients’ characteristics, healthcare issues and MRPs were kept in the same Statistical Package for Social Sciences (SPSS) data editor file. A separate data was created (in another SPSS data editor file) to assess the reliability of the MRPs categorisation. To ensure the reliability of the coded transcripts, the expert panel, which consisted of three pharmacists, were asked to tick whether they agreed or disagreed with the category within which each MRP was placed by the researcher for 10% of the interviews. Then, the expert panel and the researcher met to compare the sets of coding and resolve any inconsistencies or disagreements. The disagreement between the expert panel and the researcher was then calculated based on cases of disagreement in MRPs (when totally different problems were identified) and cases of missed coding (when one of the raters missed coding a chunk of text while other one coded it). In cases where both raters coded the same problem but with different wording, this was not considered as disagreement. The inter-coder reliability was assessed using the following formula (Artstein and Poesio, 2008):

\[
\text{Intercoder reliability} = \frac{\text{Number of agreements}}{\text{Number of agreements} + \text{number of disagreements}}
\]

The inter-coder reliability was acceptable for 10% of the interview transcripts as all the values were 90% or more. Due to the high inter-coder reliability achieved after the eighth transcript, it was decided to stop the validity check after the eighth transcript.
3.2.7 Validity of the results

Validity refers to the extent to which the study findings are a true representation of the issue examined (Smith, 2002). It has been argued that qualitative methods have inherent validity due to the capacity of the participants to discuss issues relevant to the phenomena without facing an agenda or structure (Smith, 2002). Although a semi-structured interview tool was used to elicit participants’ responses on a range of issues and views without influencing their responses since open questions and prompts were used to allow the participants to express further issues or add additional comments, the following steps were also undertaken by the researcher to ensure the validity of the results:

- Forming the basis for the validation of this study by conducting literature and systematic reviews. These reviews considered previous research within the field of MRPs and EMGs, the aims and objective of these studies and the methodology used. Previous research was considered to help ensure that this study included all issues relevant to MRPs in EMGs. The reviews provided the researcher with guidance with respect to the choice of the study research method. The literature and systematic reviews highlighted areas of importance as regards MRPs among EMGs. These included issues such as patient knowledge about their medication, medication-taking behaviour during Ramadan and when travelling back to their home lands or to take religious journeys and taking non-prescription medicines, etc. The literature and systematic reviews helped ensure that the data collection instruments covered all angles and topics relating to MRPs among EMGs.
- Certain issues that were found in the literature were considered significant and questions about these issues included in the interview schedule, e.g., the issues of altered medication-taking behaviours in Ramadan. This process ensured that the data collection instruments had content validity – content validity being a measure that the data collection instrument covered all angles and domains of the topic under investigation.
- Attending tutorials and reading books on conducting qualitative research, use of questionnaires, interviewing techniques and obtaining informed consent.
- Pilot interviews were conducted to assist the researcher in her interview technique, to ensure that the data collection instruments covered all the relevant areas and that the interview questions were unambiguous to respondents.
- Using Gordon et al.’s (2005) MRPs questionnaire which was developed after conducting a literature review and preliminary fieldwork, which ensured the inclusion of all the relevant issues concerning the phenomena being studied.
• Assuring participants of the confidentiality and independence of the research in order to relax the participants and make them comfortably discuss any problems and give their true views related to the study.

• Using follow-up questions. Participants were asked to report any non-adherence using a quantitative scale followed by a qualitative description. They were also asked to report how frequently they consulted with HCPs, which was followed by a question about their last consultation. The follow-up questions were employed to measure accuracy of the previous response.

• The researcher ensured that the participants understood the questions and in cases where the participants gave an unclear answer to a particular question, the researcher repeated the answer given by the participant.

• Using a variety of sources for data gathering (triangulation): the results obtained from pharmacy records (i.e., PMRs and MUR reports) and face-to-face semi-structured interview will be triangulated. The triangulation method will bring together qualitative and quantitative techniques and check the findings from pharmacy records against face-to-face interview, thus enhancing their validity. However, the researcher may not be able to find the same thing twice from pharmacy records and face-to-face interview. In addition, the quantitative and qualitative components of this study may yield data on different phenomena, so they may not be compared to check the ‘validity’ of each other or they may contradict one another. But, even if this happens, triangulation has an advantage of providing different viewpoints and different pictures of the phenomenon under investigation, resulting in a more complete picture if quantitative and qualitative components brought together (Bowling and Ebrahim, 2005).

• Comparing the results with existing knowledge of the subject in the literature, which is termed cumulative validity, as well as using argument validation in which the negative cases where views were inconsistent with the majority were also considered and explained (Smith, 2002).

• Commencing interviews with pharmacists to check the validity of our findings.

• Checking the relevance of a new code when it was added to ensure consistency and thoroughness of coding.

• Having the expert panel review, validate and verify the research interpretations and conclusions to ensure that the results have not been misconstrued (internal validity).

• Using Nvivo software to ensure validity of the results by providing a systematic approach to data analysis.

3.2.8 Sample representativeness

An attempt was made to ensure that there was representation of all ethnic backgrounds listed in the protocol as well as representation of participants from
different demographic characteristics. This is to allow a range of perspectives to be identified.

3.2.9 Generalisability

Generalisability exists when our results and conclusions are applicable to other context, settings, or a larger population. Although this study was conducted in four different PCTs to include pharmacies and patients from different demographic and cultural backgrounds, the findings of the present study could not capture the perspective of patients who could not speak English or Arabic unless they had a translator, which may affect the generalisability of the study. In addition, this study could not capture perspectives of people from other ethnic backgrounds such as people from White, African or Chinese origin, which may also affect the generalisability of the study. It can be concluded that the data generated by this study is context-specific and is not generalisable to a wider population. In addition, the sampling strategy for the study used non-random sampling techniques and so the data generated may not be representative of the wider populations; however, the data do provide valuable insights into issues surrounding MRPs in SA and ME groups and how these problems might be addressed. The choice of pharmacy from where the patient population was recruited may also influence the generalisability of the study results. Overall, even though the study data may not be generalisable, it provides descriptive data which fulfil the study objectives and may be used as a starting point to inform further research.

3.2.10 Ethical approval

Application to the Research Ethics Committee

Ethical approval was sought from London City and East Research Ethics Committee (REC) and was obtained on 17th October 2011. Prior to obtaining ethical approval, the required documents were prepared. A committee meeting was scheduled on the 1st September 2011 and enclosed with a cover letter for review. The documents sent to the Ethics Committee comprised the following: REC application (Appendix
15), protocol, MRPs interview schedule, MAAS and EQ-5D-3L questionnaires, letter of invitation to community pharmacists and letter of invitation to patients, participant information sheet and consent form, and other relevant documents. The researcher was advised by the Committee to attend the meeting to respond to the members’ questions and provide further explanation if required. Thus, the researcher and one of the supervisors attended the meeting.

**Response to letter from the Research Ethics Committee**

A response letter was received on the 09\(^{th}\) of September 2011 in which the Committee granted the study provisional opinion and asked the researcher to provide further information and minor changes to the documentation (Appendix 16). The researcher included all the modifications requested by the Committee, further clarifications and requirements were met, and a response letter was provided to the Committee on the 12\(^{th}\) September 2011 (Appendix 17). A favourable ethical opinion letter was received on the 17\(^{th}\) of October 2011 subject to obtaining approval from the local research and development offices (R&D) and host organisations or pharmacies prior to the patients’ recruitment (Appendix 18).

**Application to the local R&D offices**

R&D approvals (Appendix 19 and Appendix 20) were sought from North West London R&D office and North Central London R&D office and approvals were obtained on 8\(^{th}\) February 2012, 14\(^{th}\) March 2012, and 25\(^{th}\) March 2012 respectively (Appendix 21). Prior to obtaining the R&D approvals, the required documents were prepared in order to apply to each R&D office separately. The documents sent to the R&D offices comprised the following: all the documents sent and approved by the Ethics Committee as well as the research and development (R&D) form, site-specific information (SSI) form, letter of favourable opinion from the REC and other relevant documents.
Ethical consideration

Permissions were sought and granted from the developers in order to use the chosen questionnaires. Authorisation for the use of the MRPs tool, MMAS and EQ-5D-3L questionnaires was obtained free of charge by email communication from the UCL School of Pharmacy, Donald Morisky and the EuroQol Office respectively. A copy of each questionnaire was provided by email.

A patient information sheet was provided to all eligible participants who wished to take part. The leaflet included the purpose of the study, other individuals from whom relevant information may be obtained, and how data would be collected, anonymised, analysed, and disseminated, and other relevant information.

Informed written and verbal consent was obtained prior to commencing the face-to-face interviews. The patients were reminded that they could withdraw from the study at any time without providing a reason.

The interview was audio-recorded for verbatim transcription with the participant’s authorisation. For participants who declined to have an audio-recorded interview, only researcher field notes were taken.

If a significant problem was identified in the course of the research, the patients were advised and encouraged by the researcher to consult their pharmacist or GP, or alternatively, if they preferred and with their permission and consent, the researcher spoke to the community pharmacist on their behalf. Then it was the responsibility of the community pharmacist to inform the patients’ GP. In the event that the patients did not want to inform their GP, then this matter was handled by the community pharmacists through their normal clinical practice (i.e., it was the clinical judgment of the pharmacists in that situation regarding whether they wanted to inform the patients’ GP when patient safety overrides patient confidentiality).
Any information that was obtained from the patients or pharmacy records was be anonymised and treated as confidential information and kept in a coded format without the name of the patients and locked all the time in a designated cabinet for this purpose. Data were stored in the University College London (School of Pharmacy) computers where all files were password protected and only the researcher was allowed to access the data. Storage of the data was the responsibility of the researcher. Data will be stored for at least five years after the end of the study and will then be destroyed. The storage of the data during the five-year period will be the responsibility of Prof. Felicity Smith.

3.2.11 Pilot work and its impact on the development of the study

The pilot work was conducted in three pharmacies for a total of three days. A one-day visit from 9am-5pm in each pharmacy was conducted. The main objectives for the pilot study were as follows:

- To obtain demographic details of community pharmacies to see whether they are different.
- To check response rates in order to estimate the potential response rate and sample size that could be obtained for the main study.
- To identify the best method and time to recruit patients as well as the most suitable place to interview patients.
- To test the feasibility of methods (e.g., data collection forms, MRP tool, 8-item Morisky instrument and EQ-5Q-3L questionnaire) and to ensure they were acceptable and workable for this study and for these patient groups. This was done by examining question order, length of the interview, rephrasing the questions to ensure clarity if required, and adding more prompts if needed.
- To assess the feasibility to transcribe and analyse the data sets obtained from the interviews.
- To assess the practicality of obtaining relevant information from pharmacy records and to assess what type of information can be retrieved from them.
- To ensure that all the data were obtained to meet study objectives and to highlight whether any adjustments need to be made or reconsidered for the design of the main study.

The characteristics of community pharmacies were collected and described in the recruitment, response rate and characteristics of the sample - Chapter 4. Patients
(n=7/11) were recruited and interviewed during the pilot work. A (63%) response rate was obtained. In order to increase response rate further, a few steps were suggested and undertaken, as follows:

- Patients should be approached by a pharmacist first, when they come to the pharmacy.
- Patients should be approached before the pharmacist dispenses their medicines.
- Eligible patients who use the pharmacy regularly, but present with a prescription for a non-regular medicine or less than three regular medicines, and are known by the pharmacist to be eligible should be invited to take part.
- When the pharmacist was busy dispensing medicines or consulting a patient, the researcher approached and invited patients to take part in the study.
- If patients are of Arabic origin, they should be approached and invited by the pharmacist as well as the researcher – who is of Arabic origin – and provided with a full explanation of the study in Arabic.

During the pilot work, patients were recruited through a pharmacy records review (MUR and PMR) method and a direct approach method. It was concluded that the direct approach method (i.e., inviting patients when they presented in the pharmacy) was the best and simplest method to recruit patients due to many reasons, as follows:

- Asking the pharmacists to check their PMR and MUR records to identify eligible patients was time consuming and impractical especially for some pharmacies that had only one or two computers in the pharmacy or one pharmacist to go through pharmacy records, which caused disruption to routine practices.
- Response rate (0%) was very poor when recruiting patients through pharmacy records. This was done by a pharmacist in each pharmacy (n=3), who carried out a retrospective review of MUR reports and PMRs over the previous six months to identify a list of patients’ names and addresses (n=10) in each pharmacy that matched both inclusion and exclusion criteria. The community pharmacists then invited individuals via letter and the response rate was 0%. The researcher sent a follow-up letter was sent to non-responders three weeks after sending the invitation letter, to remind them to take part, which also yielded a 0% response rate.

It was noticed that the three pharmacies had not had particular busy hours during the day or a particular busy day during the week (i.e., they all varied); thus the data
were collected from 9am – 5pm with a one-hour lunch break in between (i.e., 1pm – 2pm). The best place for interviewing participants was inside the consultation room. For pharmacies that did not allow the researcher to use the consultation room either for safety purposes or because they busy almost all the time, a quiet and separate area in the pharmacy was used to interview patients. This was conducted to ensure that the routine practice within pharmacies was not affected whilst the research study took place. Pharmacy staff and patient acceptability were also required to ensure that the research was not intrusive.

No changes were made in the content, wording, layout or order of the questionnaires after piloting them. They were workable, acceptable, and easy to understand and able to identify any problems experienced by patients regarding the use of their medicines. The only thing that was changed was the order of administering the questionnaires. The order was as follows respectively: MRP tool, 8-item Morisky instrument and EQ-5Q-3L questionnaire and, finally, demographic details of participants. This order was chosen in order to collect necessary information that could not be obtained without interviewing patients face-to-face, such as their perspectives, experiences and behaviours using the MRPs semi-structured questionnaire. If time allowed, the surveys were administered by asking questions directly to the participants in the interview but if time did not allow, the participants were asked to fill in the questionnaire at home and give it back to the community pharmacist in a sealed envelope or post it to the researcher’s address. The length of the interview varied depending on the participants’ answers.

Transcription and preliminary analysis of the pilot data were performed and the results were able to meet the study objectives, and they were combined with the results of the main study section.

Pharmacy records review was used to validate and identify potential MRPs such as DIs, non-compliance issues, dosage and dose frequency problems. These records were also used to know whether the patient had any problems with their repeat prescription or problem with ordering their repeat medication, such as mobility
issues and dependency on carer for obtaining repeat prescription. The following information was retrieved and assessed from the pharmacy records:

- Current prescribed and non-prescribed drug therapy for the previous six months.
- Patients’ knowledge of their medications, including what medications they are taking (e.g., the names, strengths, types of medications, reasons for taking medications, when to take them, how to take them, etc.).
- Intentional compliance issues due to patients’ concerns about side effects or belief that their medications were not effective, which could result in poor compliance.
- Non-intentional compliance issues such as difficulty using a product form, manual dexterity problems, memory problems, visual or hearing problems, and swallowing difficulties.
- Type of suggestions made to a particular prescriber.

At an early stage, all the data that were obtained met the study objectives and no major adjustments were made for the design of the main study. Testing of the method and tool under the conditions proposed for this research study clearly demonstrated, that despite the busy and demanding routines of any pharmacy, methods and tools could identify patients and the MRPs they experienced.

**Key messages from Chapter 3**

- This study was a cross-sectional study.
- Patients were from SA and ME origins, aged over 18 and prescribed three or more regular medicines.
- Patients were identified through previous medicine use reports (MUR), patient medication records (PMR) or when presenting with a prescription.
- The data were collected in 80 face-to-face semi-structured interviews in seven pharmacies in London using MRPs tool, 8-item MMAS, and EQ-5D-3L.
- Interviews were audio-taped; transcribed verbatim and analysed thematically using Gordon’s coding frame and Nvivo 10 software. SPSS 21 software was used to analyse quantitative data.
- The pilot work indicated that the potential response rate for patients in the main study would be high if the recommended steps in Chapter 3 to increase response rate were closely followed.
- Inviting patients when they presented in the pharmacy was the best method to recruit participants.
- The methods used were acceptable and workable for the main study.
Chapter 4  Recruitment, response rates and characteristics of the sample

Introduction

Low participation rates of ethnic minority population in research studies is a concern that has been raised (Heiat et al., 2002; Mason et al., 2003). However, there is absence of evidence that reports the reasons for lack of participation because many studies do not reveal the ethnicity of participants and do not sufficiently report the reasons for exclusion or ineligibility (Jolly et al., 2005). It is crucial to understand the reasons for non-participation; firstly because this will help to assess generalisability of the results by understanding the representativeness of the sample. Secondly, it may allow future researchers to obtain higher response rates and thus more representative sample from similar populations. Thus, this chapter addresses these questions and reports the recruitment and response rates of pharmacies and patients in relation to medicine use and medicine-related problems experienced by SA and ME patients with chronic diseases in primary care in the UK. It also provides a description of the characteristics of the participating pharmacies, the SA and ME patients participating in the interviews, and the SA and ME patients who did not take part in the interviews. This was done to identify the response rate and the reasons for non-participating and to describe the participants of the current study.

4.1  Recruitment, the response rate and characteristics of the participating pharmacies and patients

4.1.1  Pharmacies

The methods used for recruiting community pharmacies were described in Chapter 3. Ninety-four out of three hundred and thirty-five community pharmacies in Camden, Westminster, Brent, and Harrow met the inclusion criteria and were eligible to take part. All the 94 pharmacies were invited by sending an invitation
letter. After two weeks, an email was sent and a telephone follow-up was made to the non-responding pharmacies. A personal visit was also made to the rest of the non-responders two weeks after contacting pharmacies by email and telephone. Of the 94 pharmacies invited only seven agreed to take part (Response rate 7.5%) whereas 87 declined to take part in the study (Non-participation rate 92.5%). Shortage of full-time pharmacists, lack of interest, heavy workload, the lack of time as well as lack of payment and place to interview patients were the reasons that were given for non-participation. Six pharmacies agreed to participate after the researcher made a personal visit and one agreed after a telephone follow-up. The recruitment methods used and response rate of pharmacies in each PCT are illustrated in Table 4-1. Pharmacies’ visiting timetables by month is illustrated as Appendix 22.

Three out of the seven pharmacies that agreed to take part are located in Westminster. Going to the pharmacies in person was the best method of recruitment (i.e., six out of seven) in comparison to recruiting pharmacies though invitation letter, email or telephone follow-up. Five of the seven pharmacies were independent pharmacies (single-handed). There were only two types of computerised systems used among seven pharmacies (i.e., PROSCRIPT and Next Phase). The number of pharmacies’ staff varied and ranged from four to 12 people. Staff members consisted of pharmacists (i.e., regular and/or locum), pharmacy technicians and counter assistants. Although all the seven pharmacies were ethnically diverse, South Asian staff represented the largest ethnic group and Gujarati was the most commonly spoken language in the pharmacies as well as English.
### Table 4-1: The recruitment methods used and response rate of pharmacies in each PCT.

<table>
<thead>
<tr>
<th>Pharmacies (PHARMS)</th>
<th>No. of eligible PHARMS</th>
<th>No. of PHARMS approached by sending an invitation letter (IL)</th>
<th>No. of PHARMS approached by sending an email (E)</th>
<th>No. of PHARMS approached by telephone (Tel)</th>
<th>No. of PHARMS approached by in-person visit (V)</th>
<th>No. of PHARMS agreed to take part</th>
<th>The last method used to convince pharmacy to take part</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacies in Camden (n=72)</td>
<td>21</td>
<td>21</td>
<td>6</td>
<td>18</td>
<td>2</td>
<td>1</td>
<td>In-person visit</td>
</tr>
<tr>
<td>Pharmacies in Westminster (n=102)</td>
<td>13</td>
<td>13</td>
<td>6</td>
<td>11</td>
<td>5</td>
<td>3</td>
<td>In-person visit</td>
</tr>
<tr>
<td>Pharmacies in Brent (n=87)</td>
<td>37</td>
<td>37</td>
<td>8</td>
<td>33</td>
<td>2</td>
<td>2</td>
<td>1 (Telephone) and 1 (In-person visit)</td>
</tr>
<tr>
<td>Pharmacies in Harrow (n=74)</td>
<td>22</td>
<td>22</td>
<td>2</td>
<td>18</td>
<td>2</td>
<td>1</td>
<td>In-person visit</td>
</tr>
</tbody>
</table>
The number of customers entering the pharmacies varied where the highest was in pharmacy number 2 (n=277) and the lowest was in pharmacy number 6 (n=65). The pharmacies in Westminster served a larger population of Middle Eastern customers whereas the pharmacies in other PCTs served a larger population of South Asian patients. The number of prescriptions and prescription items dispensed by the seven pharmacies differed where the highest was in pharmacy number 2 (n=140 and 307) and the lowest was in pharmacy number 6 (n= 62 and 136) respectively. All the pharmacies provided essential, advanced and enhanced services. No big difference was found between the services provided in each pharmacy. The number of MURs that each pharmacy undertakes each year varied between 50 and 400. All the seven pharmacies had a private consultation room but only five pharmacies allowed the interviews to be conducted in their consultation room. Only the interviews that were conducted in pharmacies number 2 and 4 were quiet and private where they could not be overheard by others. Although some of the interviews were conducted outside the consultation room or inside the consultation room but the door was not closed, careful attention was given to make sure that no one was close enough to overhear or affect the response given by the participant or the flow of the interview. Interviews were carried out between May and October, 2012. The characteristics of participating pharmacies are shown in Table 4-2.
### Table 4-2: Characteristics of participating pharmacies.

<table>
<thead>
<tr>
<th>Pharmacy code</th>
<th>Pharmacy 1</th>
<th>Pharmacy 2</th>
<th>Pharmacy 3</th>
<th>Pharmacy 4</th>
<th>Pharmacy 5</th>
<th>Pharmacy 6</th>
<th>Pharmacy 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Camden</td>
<td>Westminster</td>
<td>Westminster</td>
<td>Westminster</td>
<td>Brent</td>
<td>Brent</td>
<td>Harrow</td>
</tr>
<tr>
<td>Type of pharmacy</td>
<td>Single handed</td>
<td>Group pharmacy</td>
<td>Single handed</td>
<td>Single handed</td>
<td>Group pharmacy</td>
<td>Single handed</td>
<td>Single handed</td>
</tr>
<tr>
<td>Type of PMR system</td>
<td>PROSCRIPT</td>
<td>Next Phase</td>
<td>PROSCRIPT</td>
<td>Next Phase</td>
<td>PROSCRIPT</td>
<td>PROSCRIPT</td>
<td>PROSCRIPT</td>
</tr>
<tr>
<td>No. of pharmacy staff</td>
<td>5</td>
<td>12</td>
<td>8</td>
<td>8</td>
<td>4</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>No. of pharmacists</td>
<td>2 (1:regular) and (1:locum)</td>
<td>4 (2:regular) and (2:locum)</td>
<td>3 (3: regular)</td>
<td>4 (1: regular) and (3: locum)</td>
<td>1 (1: regular)</td>
<td>1 (1: regular)</td>
<td>3 (2:regular) and (1:locum)</td>
</tr>
<tr>
<td>No. of technicians</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>No. of counter assistants</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Ethnicity of pharmacy staff</td>
<td>Indian, Bangladeshi, White British</td>
<td>Arab, Indian, Black African, White British</td>
<td>Indian, Irish</td>
<td>Indian, Bangladeshi</td>
<td>Pakistani, Black African</td>
<td>Indian, Afghani</td>
<td>Indian</td>
</tr>
<tr>
<td>No. of patients entering the pharmacy in the first visit from 9am-5pm</td>
<td>71</td>
<td>277</td>
<td>195</td>
<td>84</td>
<td>769</td>
<td>65</td>
<td>74</td>
</tr>
<tr>
<td>Total number of South Asians</td>
<td>10</td>
<td>10</td>
<td>9</td>
<td>15</td>
<td>6</td>
<td>35</td>
<td>55</td>
</tr>
<tr>
<td>Total number of Middle Easterners</td>
<td>0</td>
<td>37</td>
<td>32</td>
<td>21</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>
Table 4-2: Continued characteristics of participating pharmacies.

<table>
<thead>
<tr>
<th>Pharmacy code</th>
<th>Pharmacy 1</th>
<th>Pharmacy 2</th>
<th>Pharmacy 3</th>
<th>Pharmacy 4</th>
<th>Pharmacy 5</th>
<th>Pharmacy 6</th>
<th>Pharmacy 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of prescription</td>
<td>62</td>
<td>140</td>
<td>92</td>
<td>125</td>
<td>83</td>
<td>62</td>
<td>95</td>
</tr>
<tr>
<td>Total number of items</td>
<td>170</td>
<td>307</td>
<td>202</td>
<td>299</td>
<td>151</td>
<td>136</td>
<td>222</td>
</tr>
<tr>
<td>Type of services that the pharmacy provides</td>
<td>Essential Service, advance service [i.e., the New Medicine Service (NMS), Medicine Use Review service (MUR)] and enhanced service [i.e., minor ailments, emergency contraception, smoking cessation, BP test]</td>
<td>Essential Service, advance service [i.e., NMS and MUR] and enhanced service [i.e., smoking cessation, supervised consumption of methadone]</td>
<td>Essential Service, advance service [i.e., repeat request, delivery service, NMS and MUR] and enhanced service [i.e., smoking cessation]</td>
<td>Essential Service, advance service [i.e., NMS and MUR] and enhanced service [i.e., minor ailments, supervised administration, administration of influenza immunisation, needle exchange services]</td>
<td>Essential Service, advance service [i.e., NMS and MUR] and enhanced service [i.e., supervised consumption of methadone, EHC on PGD patient group directive, sexual health services, health M.O.T service, food intolerance testing]</td>
<td>Essential Service, advance service [i.e., NMS and MUR] and enhanced service [i.e., smoking cessation, weight management, BP monitoring]</td>
<td></td>
</tr>
<tr>
<td>No. of MUR conducted in the pharmacy per year</td>
<td>50</td>
<td>400</td>
<td>300</td>
<td>200</td>
<td>400</td>
<td>50</td>
<td>400</td>
</tr>
</tbody>
</table>
4.1.2 Patients

The methods used to recruit the patients are described in Chapter 3. A total of 30 patients were invited using MUR and PMR review method. Of the 30 patients who were sent an invitation letter to take part in the study, none responded (response rate 0%). After two weeks a reminder letter was sent to non-responders; two patients declined to take part and 28 patients did not respond.

A total of one hundred patients were approached in the seven community pharmacies using the direct approach method. Eighty participants agreed and consented to participate in the study. The overall response rate from recruitment in the seven community pharmacies was 80%. Complete interviews were obtained for 77 participants and three interviews were partially completed. Twenty patients declined to take part in the study, all of whom were asked to identify their ethnicity and to give a reason for non-participation. Generally, pharmacies with a high number of patients entering the pharmacy in the first day visit had higher response rates except pharmacy number 6.

Table 4-3 shows that the lowest response rate was obtained from pharmacies number 1 and 7 and the highest was from pharmacies number 2, 3, 5 and 6. There could be many reasons for this; for example, in pharmacies number 5 and 6 the response rates were high because the regular pharmacist approached the patients first, explained about the study and encouraged patients to participate. Also, pharmacies number 2 and 3 were located in areas that serve a higher population of Arabs and because the researcher is of Arabic origin and speaks the same language, this facilitated the recruitment process and increased the response rates in these pharmacies. Pharmacies number 1 and 7 had the lowest response rates possibly because they were located in less busy and less densely populated areas than the other pharmacies.
Table 4-3: Number of recruits and response rate in each pharmacy.

<table>
<thead>
<tr>
<th>Pharmacy</th>
<th>Number of Recruits</th>
<th>Full Responders</th>
<th>PartialResponders</th>
<th>Declined</th>
<th>Ineligible</th>
<th>Response Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacy 1</td>
<td>11</td>
<td>6</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>64%</td>
</tr>
<tr>
<td>Pharmacy 2</td>
<td>18</td>
<td>16</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>89%</td>
</tr>
<tr>
<td>Pharmacy 3</td>
<td>16</td>
<td>13</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>88%</td>
</tr>
<tr>
<td>Pharmacy 4</td>
<td>10</td>
<td>7</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>70%</td>
</tr>
<tr>
<td>Pharmacy 5</td>
<td>7</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>100%</td>
</tr>
<tr>
<td>Pharmacy 6</td>
<td>19</td>
<td>15</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>84%</td>
</tr>
<tr>
<td>Pharmacy 7</td>
<td>19</td>
<td>13</td>
<td>0</td>
<td>6</td>
<td>3</td>
<td>68%</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>77</td>
<td>3</td>
<td>20</td>
<td>18</td>
<td>80%</td>
</tr>
</tbody>
</table>

* Full responders completed the interview and partial responders did not fully complete the interview.

* Ineligible patients did not fit the inclusion criteria and were not recruited.

Responders

Characteristics of 80 participants obtained during the interviews (e.g., age, gender, ethnicity, country of birth, coming year to the UK, living arrangement, main language, religion, education, employment) were entered into a database in SPSS v 21 and are illustrated in Table 4-4. The mean age of participants was 58 years (SD 13, range 18-83) and 49 (61%) were male. Sixty participants (75%) were 65 years or below. The majority described themselves as Arabs (n= 38, 48%) followed by Indian (n=26, 33%). Seventy-seven (96%) of them were born outside the UK, of which 49 (61%) arrived in the UK in 1990 or before. Fifty-four (68%) were Muslims and 19 (24%) were Hindu. Arabic was the most commonly spoken language among participants at 38 (48%) followed by Gujarati at 19 (29%). Most participants lived with one or more family members (n= 67, 84%). Participants were asked about their current occupation: 11 (14%) were currently self-employed or employed as full-time or part-time workers. The remaining were not currently employed – 24 (30%), retired – 28 (35%) or homemakers – 16 (20%). Participants were also asked about their education status: 29 (36%) had qualifications higher than high school, 35 (44%) had high school or lower qualifications and 16 (20%) had no qualifications.
### Table 4-4: Characteristics of the 80 participants.

<table>
<thead>
<tr>
<th>Participants’ characteristics</th>
<th>Statistic</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (years)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N (%)</td>
<td>18-83</td>
<td></td>
</tr>
<tr>
<td><strong>≤ 65</strong></td>
<td>N (%)</td>
<td>60 (75)</td>
</tr>
<tr>
<td><strong>&gt; 65</strong></td>
<td>N (%)</td>
<td>20 (25)</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>N (%)</td>
<td>49 (61)</td>
</tr>
<tr>
<td>Female</td>
<td>N (%)</td>
<td>31 (39)</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Asians</td>
<td>N (%)</td>
<td>40 (50)</td>
</tr>
<tr>
<td>Indian</td>
<td>N (%)</td>
<td>26 (33)</td>
</tr>
<tr>
<td>Pakistani</td>
<td>N (%)</td>
<td>8 (10)</td>
</tr>
<tr>
<td>Bangladeshi</td>
<td>N (%)</td>
<td>4 (5)</td>
</tr>
<tr>
<td>Sri Lankan</td>
<td>N (%)</td>
<td>2 (2)</td>
</tr>
<tr>
<td>Middle Easterners</td>
<td>N (%)</td>
<td>40 (50)</td>
</tr>
<tr>
<td>Arabs</td>
<td>N (%)</td>
<td>38 (48)</td>
</tr>
<tr>
<td>Iranian</td>
<td>N (%)</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Turkish</td>
<td>N (%)</td>
<td>1 (1)</td>
</tr>
<tr>
<td><strong>Country of birth</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The UK</td>
<td>N (%)</td>
<td>3 (4)</td>
</tr>
<tr>
<td>Other</td>
<td>N (%)</td>
<td>77 (96)</td>
</tr>
<tr>
<td><strong>Year of arrival in the UK (years)</strong></td>
<td>N (%)</td>
<td>49 (61)</td>
</tr>
<tr>
<td><strong>Living arrangement</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alone</td>
<td>N (%)</td>
<td>13 (16)</td>
</tr>
<tr>
<td>With others</td>
<td>N (%)</td>
<td>67 (84)</td>
</tr>
<tr>
<td><strong>Main Language</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>N (%)</td>
<td>5 (6)</td>
</tr>
<tr>
<td>Gujarati</td>
<td>N (%)</td>
<td>19 (24)</td>
</tr>
<tr>
<td>Urdu</td>
<td>N (%)</td>
<td>6 (8)</td>
</tr>
<tr>
<td>Bengali</td>
<td>N (%)</td>
<td>4 (5)</td>
</tr>
<tr>
<td>Punjabi</td>
<td>N (%)</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Hindi</td>
<td>N (%)</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Arabic</td>
<td>N (%)</td>
<td>38 (48)</td>
</tr>
<tr>
<td>Farsi</td>
<td>N (%)</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Turkish</td>
<td>N (%)</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Other</td>
<td>N (%)</td>
<td>4 (5)</td>
</tr>
</tbody>
</table>
Table 4-4: Continued characteristics of the 80 participants.

<table>
<thead>
<tr>
<th>Participants’ characteristics</th>
<th>Statistic</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Religion</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No religion</td>
<td>N (%)</td>
<td>2 (2)</td>
</tr>
<tr>
<td>Christian</td>
<td>N (%)</td>
<td>3 (4)</td>
</tr>
<tr>
<td>Hindu</td>
<td>N (%)</td>
<td>19 (24)</td>
</tr>
<tr>
<td>Muslim</td>
<td>N (%)</td>
<td>54 (68)</td>
</tr>
<tr>
<td>Other</td>
<td>N (%)</td>
<td>2 (2)</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; High school</td>
<td>N (%)</td>
<td>29 (36)</td>
</tr>
<tr>
<td>≤ High school</td>
<td>N (%)</td>
<td>35 (44)</td>
</tr>
<tr>
<td>No education</td>
<td>N (%)</td>
<td>16 (20)</td>
</tr>
<tr>
<td><strong>Employment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time worker</td>
<td>N (%)</td>
<td>5 (6)</td>
</tr>
<tr>
<td>Part-time worker</td>
<td>N (%)</td>
<td>3 (4)</td>
</tr>
<tr>
<td>Self-employed</td>
<td>N (%)</td>
<td>3 (4)</td>
</tr>
<tr>
<td>Unemployed</td>
<td>N (%)</td>
<td>24 (30)</td>
</tr>
<tr>
<td>Retired</td>
<td>N (%)</td>
<td>28 (35)</td>
</tr>
<tr>
<td>Homemaker</td>
<td>N (%)</td>
<td>16 (20)</td>
</tr>
<tr>
<td>Student</td>
<td>N (%)</td>
<td>1 (1)</td>
</tr>
</tbody>
</table>

The 80 participants reported using a mean of 8 POMs (SD 4, range 3-21) POMs. Figure 4-1 illustrates the number of prescription medicines used by interview participants. The majority of participants (61/79, 77%) were taking ≤9 medicines. It was not possible to identify the name and number of medicines for one participant because the medication history was not on the pharmacy’s PMR.
Figure 4-1: The number of prescription medicines used by interview participants (n=79).

The medicines used by participants were confirmed by the researcher during the interviews and through pharmacy records review. Figure 4-2 shows the number of participants taking at least one POM from any BNF chapter. The majority of participants (n= 67) had at least one cardiovascular drug. Many participants were using a medicine for central nervous (n= 51), Endocrine (n= 49) and Gastrointestinal systems (n=41).
Chapter 4 – Recruitment, response rates and characteristics of the sample

Figure 4-2: Number of interview participants having medicines from each BNF chapter.

The number and types of medicines used by interview participants are tabulated in their BNF chapters in Table 4-5. The number and type of each medicine (medicine listed in its generic form) is shown for each BNF chapter. The total number and percentage of medicines from each BNF chapter is also shown. The highest number of medicines prescribed and used by participants were for the cardiovascular system in BNF chapter 2 (38%), followed by central nervous system in BNF chapter 4 (n=18%) and endocrine system in BNF chapter 6 (n=17%). A wide range of medicines were prescribed for this sample which represented all classes in the BNF chapters; this means that this study had a broad and diverse range of participants. Their chronic diseases patterns (e.g., diabetes, cardiovascular diseases, respiratory diseases, rheumatoid diseases and central nervous system diseases) are similar to the ones identified in the literature in these populations (Sidi et al., 2009; Opara et al., 2010).
Table 4-5: Type and number of prescription medicines documented as used by the interview participants (n=79).

<table>
<thead>
<tr>
<th>BNF chapters and categories of prescription medicines (chapter 1-5)</th>
<th>Number (%) of medicines documented for interview participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total medicines in BNF chapters 1-12</td>
<td>612</td>
</tr>
<tr>
<td>1 Gastro-intestinal system</td>
<td>51 (8%)</td>
</tr>
<tr>
<td>1.1 Antacids and other drugs for dyspepsia</td>
<td>4</td>
</tr>
<tr>
<td>1.3 Ulcer healing drugs</td>
<td>38</td>
</tr>
<tr>
<td>1.6 Laxative</td>
<td>8</td>
</tr>
<tr>
<td>1.7 Compound haemorrhoids preparations</td>
<td>1</td>
</tr>
<tr>
<td>2 Cardiovascular system</td>
<td>234 (38%)</td>
</tr>
<tr>
<td>2.2 Diuretics</td>
<td>21</td>
</tr>
<tr>
<td>2.3 Anti-arrhythmic drugs</td>
<td>1</td>
</tr>
<tr>
<td>2.4 Beta-adrenoceptor blocking drugs</td>
<td>24</td>
</tr>
<tr>
<td>2.5 Drugs affecting rennin-angiotensin system, centrally acting antihypertensive, alpha-adrenoceptor blocking drugs</td>
<td>51</td>
</tr>
<tr>
<td>2.6 Nitrates, calcium-channel blockers and potassium-channel activators</td>
<td>38</td>
</tr>
<tr>
<td>2.8 Oral anticoagulants</td>
<td>2</td>
</tr>
<tr>
<td>2.9 Antiplatelet drugs</td>
<td>35</td>
</tr>
<tr>
<td>2.12 Lipid-regulating drugs</td>
<td>62</td>
</tr>
<tr>
<td>3 Respiratory system</td>
<td>32 (5%)</td>
</tr>
<tr>
<td>3.1 Bronchodilator</td>
<td>15</td>
</tr>
<tr>
<td>3.2 Corticosteroids</td>
<td>13</td>
</tr>
<tr>
<td>3.3 Cromoglycates and related therapy</td>
<td>3</td>
</tr>
<tr>
<td>3.4 Antihistamines</td>
<td>1</td>
</tr>
<tr>
<td>4 Central nervous system</td>
<td>108 (18%)</td>
</tr>
<tr>
<td>4.1 Hypnotics and anxiolytics</td>
<td>11</td>
</tr>
<tr>
<td>4.2 Antipsychotics</td>
<td>4</td>
</tr>
<tr>
<td>4.3 Antidepressant drugs</td>
<td>32</td>
</tr>
<tr>
<td>4.5 Treatment of obesity</td>
<td>2</td>
</tr>
<tr>
<td>4.6 Drugs in nausea and vertigo</td>
<td>7</td>
</tr>
<tr>
<td>4.7 Analgesics</td>
<td>45</td>
</tr>
<tr>
<td>4.8 Control of epilepsies</td>
<td>7</td>
</tr>
<tr>
<td>5 Infections</td>
<td>1 (0.2%)</td>
</tr>
<tr>
<td>5.1 Antibacterial</td>
<td>1</td>
</tr>
</tbody>
</table>
Table 4-5: Continued type and number of prescription medicines documented as used by the interview participants (n= 79).

<table>
<thead>
<tr>
<th>BNF chapters and categories of prescription medicines (chapter 6-12)</th>
<th>Number (%) of medicines documented for interview participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 Endocrine system</td>
<td>101 (17%)</td>
</tr>
<tr>
<td>6.1 Drugs used in diabetes</td>
<td>84</td>
</tr>
<tr>
<td>6.2 Thyroid and antithyroid drugs</td>
<td>4</td>
</tr>
<tr>
<td>6.3 Corticosteroids</td>
<td>1</td>
</tr>
<tr>
<td>6.4 Sex hormones</td>
<td>1</td>
</tr>
<tr>
<td>6.6 Drugs affecting bone metabolism</td>
<td>11</td>
</tr>
<tr>
<td>7 Obstetrics, gynaecology, and urinary-tract disorders</td>
<td>6 (1%)</td>
</tr>
<tr>
<td>7.1 Drugs used for urinary retention</td>
<td>6</td>
</tr>
<tr>
<td>8 Malignant disease and immunosuppression</td>
<td>1 (0.2%)</td>
</tr>
<tr>
<td>8.3 Sex hormones and hormone antagonist in malignant disease</td>
<td>1</td>
</tr>
<tr>
<td>9 Oral nutrition</td>
<td>38 (6%)</td>
</tr>
<tr>
<td>9.1 Anaemias and other blood disorders (oral iron and epoietin)</td>
<td>18</td>
</tr>
<tr>
<td>9.6 Vitamins</td>
<td>20</td>
</tr>
<tr>
<td>10 Musculoskeletal and joint diseases</td>
<td>32 (5%)</td>
</tr>
<tr>
<td>10.1.1 Non-steroidal anti-inflammatory drugs</td>
<td>20</td>
</tr>
<tr>
<td>10.1.3 Rheumatic disease process drugs</td>
<td>4</td>
</tr>
<tr>
<td>10.1.4 Drugs for treatment of gout</td>
<td>3</td>
</tr>
<tr>
<td>10.2 Drugs used in neuromuscular disorders</td>
<td>2</td>
</tr>
<tr>
<td>10.3.2 Rubefacients and other topical antirheumatics</td>
<td>3</td>
</tr>
<tr>
<td>11 Eye</td>
<td>8 (1%)</td>
</tr>
<tr>
<td>11.6 Treatment of glaucoma</td>
<td>2</td>
</tr>
<tr>
<td>11.8 Miscellaneous ophthalmic preparation</td>
<td>6</td>
</tr>
<tr>
<td>12 Ear, nose, and oropharynx</td>
<td>2 (0.3%)</td>
</tr>
<tr>
<td>12.1 Drugs acting on the ear</td>
<td>1</td>
</tr>
<tr>
<td>12.2 Drugs acting on the nose</td>
<td>1</td>
</tr>
</tbody>
</table>
Table 4-6: Twenty-one most common medicines used by the interview participants.

<table>
<thead>
<tr>
<th>Name of medicine</th>
<th>BNF chapter</th>
<th>Number of participants using medicines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Omeprazole</td>
<td>1.3</td>
<td>27</td>
</tr>
<tr>
<td>Bendroflumethiazide</td>
<td>2.2</td>
<td>8</td>
</tr>
<tr>
<td>Furosemide</td>
<td>2.2</td>
<td>8</td>
</tr>
<tr>
<td>Bisoprolol</td>
<td>2.4</td>
<td>9</td>
</tr>
<tr>
<td>Doxazosin</td>
<td>2.5</td>
<td>8</td>
</tr>
<tr>
<td>Losartan</td>
<td>2.5</td>
<td>8</td>
</tr>
<tr>
<td>Amlodipine</td>
<td>2.6</td>
<td>22</td>
</tr>
<tr>
<td>Aspirin</td>
<td>2.9</td>
<td>27</td>
</tr>
<tr>
<td>Atorvastatin</td>
<td>2.12</td>
<td>17</td>
</tr>
<tr>
<td>Simvastatin</td>
<td>2.12</td>
<td>33</td>
</tr>
<tr>
<td>Salbutamol</td>
<td>3.1</td>
<td>11</td>
</tr>
<tr>
<td>Amitriptyline</td>
<td>4.3</td>
<td>11</td>
</tr>
<tr>
<td>Co-codamol</td>
<td>4.7</td>
<td>11</td>
</tr>
<tr>
<td>Paracetamol</td>
<td>4.7</td>
<td>18</td>
</tr>
<tr>
<td>Calcichew-D3</td>
<td>9.6</td>
<td>8</td>
</tr>
<tr>
<td>Colecalciferol</td>
<td>6.6</td>
<td>9</td>
</tr>
<tr>
<td>Gliclazide</td>
<td>6.1</td>
<td>13</td>
</tr>
<tr>
<td>Insulin preparations</td>
<td>6.1</td>
<td>14</td>
</tr>
<tr>
<td>Metformin</td>
<td>6.1</td>
<td>36</td>
</tr>
<tr>
<td>Folic acid</td>
<td>9.1</td>
<td>14</td>
</tr>
<tr>
<td>Diclofenac</td>
<td>10.1.1</td>
<td>9</td>
</tr>
</tbody>
</table>

The most commonly used medicines by participants as shown in Table 4-6 were Metformin (n=36), Simvastatin (n=33), Aspirin (n=27) and Omeprazole (n=27). Metformin is an oral antidiabetic medicine in the Biguanide class (BNF chapter 6). Simvastatin is a hypolipidemic medicine to control high cholesterol (BNF chapter 2). Aspirin is an antiplatletes medicine that helps to prevent heart attacks, strokes and blood clot formation in people at high risk of developing blood clots (BNF chapter 2). Omeprazole is a proton pump inhibitor used in gastrointestinal disorders (BNF chapter 1). All the participants were taking tablets and/or capsules (79/79, 100%) and a small number of participants were taking Insulins (14/79, 18%) and/or inhalers (13/79, 17%).

The use of non-prescription medicines including OTC and herbal medicines was wide spread in South Asian and Middle Eastern participants. Forty-two participants reported using non-prescription medicines on a regular basis (once a year or more
Chapter 4 – Recruitment, response rates and characteristics of the sample

frequently). The 42 participants were taking a mean of 2.0 (SD 1.4, range 1-5) non-prescription medicines. The 42 participants were using 81 non-prescription medicines. The types of non-prescription medicines used by the 42 participants are outlined in Table 4-7.

Table 4-7: Type and number of non-prescription medicines used by interview participants (n=42).

<table>
<thead>
<tr>
<th>Name of non-prescription Medicine</th>
<th>BNF</th>
<th>Name of Non-POM</th>
<th>Number (%) of non-prescription medicines used by interview participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastro-intestinal system</td>
<td>1</td>
<td>Gaviscon ®</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pepto-Bismol ®</td>
<td></td>
</tr>
<tr>
<td>Respiratory system</td>
<td>3</td>
<td>Piriton ®</td>
<td>1</td>
</tr>
<tr>
<td>Central nervous system</td>
<td>4</td>
<td>Paracetamol [various products]</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aspirin</td>
<td></td>
</tr>
<tr>
<td>Oral nutrition</td>
<td>10</td>
<td>Cod liver oil</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Multivitamin preparations</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vitamin C</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vitamin E</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vitamin B6</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Garlic capsules</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Calcium supplements</td>
<td>3</td>
</tr>
<tr>
<td>Musculoskeletal and joint disease</td>
<td>10</td>
<td>Ibuprofen</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Heat or cold patches</td>
<td>1</td>
</tr>
<tr>
<td>Eye</td>
<td>11</td>
<td>Visionace</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>Cinnamon tea</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chamomile</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Powder from Syria for weight loss</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Harad</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Green tea</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thyme</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jancobilbola</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ajwain</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jeera</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chinese oil</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mithi</td>
<td>1</td>
</tr>
</tbody>
</table>

Participants of all ages used non-POMs (mean 57, range 18-83 years). Both males (25/42, 60%) and females (17/42, 40%) used non-POMs. All but two participants were first generation. Almost an equal number of SA (23/42, 55%) and ME participants used non-POMs (19/42, 45%). The majority had no university education.
(27/42, 64%) and used a small number of POMs (mean 7, range 3-17). Paracetamol, Cod liver oil and Multivitamins were most commonly used non-prescription medicines. Participants were using more prescription medicines compared with non-prescription medicines. However, the use of non-prescription therapies varied from one participant to another.

Almost half or more than half of the participants reported problems in mobility (61%), usual activities (48%), pain discomfort (70%), anxiety and/or depression (47%) when they were asked to indicate their health status using EQ-5D-3L. Table 4-8 illustrates the number of participants reporting problems in EQ-5D dimensions where moderate and extreme categories of each dimension were combined. Figure 4-3 describes the distribution of health status scores as measured by EQ-5D-3L and the figure illustrates that the mean state of health was 60%. In 2011, the mean general health status for people living in England was 81.4% (ONS, 2011). This means that the majority of SA and ME patients had poorer health than the general population, which is consistent with the literature. Such results are not surprising in the light of previous national surveys from the UK and among other countries where scores of health status are worse in people of lower socioeconomic class and from ethnic minority groups (Bhopal, 2007). Some BME groups experience worse health than others. For example, surveys commonly show that Pakistani, Bangladeshi and Black-Caribbean people report the poorest health, with Indian, East African Asian and Black African people reporting the same health as White British, and Chinese people reporting better health (Bhopal, 2007).

Table 4-8: Participant numbers reporting problems in EQ-5D dimensions for 79 participants.

<table>
<thead>
<tr>
<th>EQ-5D</th>
<th>No problem N (%)</th>
<th>Some or severe problems N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility</td>
<td>31 (39%)</td>
<td>48 (61%)</td>
</tr>
<tr>
<td>Self-care</td>
<td>53 (67%)</td>
<td>26 (33%)</td>
</tr>
<tr>
<td>Usual activities</td>
<td>41 (52%)</td>
<td>38 (48%)</td>
</tr>
<tr>
<td>Pain discomfort</td>
<td>24 (30%)</td>
<td>55 (70%)</td>
</tr>
<tr>
<td>Anxiety/Depression</td>
<td>42 (53%)</td>
<td>37 (47%)</td>
</tr>
</tbody>
</table>
Patients who were eligible but declined to take part in the study and those who were ineligible

Twenty patients were eligible but refused to take part in the study. All 20 patients declined, and were asked about their ethnicity and to give a reason for non-participation. Fifteen were male and five were female; seven described themselves as Indian, six as Bangladeshi, one as Pakistani, four as Arab and two as Iranian. More South Asian (n=14) than Middle Eastern (n=6) patients refused to take part. The reasons for not participating in the study as reported by the non-participants in the pharmacies were family commitments and time constraints (n=10), having a hospital or GP appointment (n=6), not interested in the study (n=2) and feeling unwell (n=2). Feeling unwell means having a physical condition, hearing problem, visual loss or mental illness that would interfere with their ability to undertake the interview, read written materials or hear the questions.

Eighteen patients were ineligible to take part in the study. Ten of these patients were female and eight were male; nine described themselves as Bangladeshi, six as
Indian, two as Pakistani and one as Arab. Significantly more South Asian patients (n=17) were ineligible than Middle Eastern (n=1) patients. The most common reason given by the ineligible patients was language barriers (n=14) (i.e., inability to speak English or Arabic). Of those ineligible as a result of language barriers, eight described themselves as of Bangladeshi origin and 11 of female gender. The remaining patients (n=4) were not approached because either pharmacists perceived them as being unwell (n=2) or rude (n=2). The number of ineligible patients (n=18) was small and almost the same as the number of patients who were unwilling to take part (n=20). Thus, the method used to select eligible patients was successful.

4.2 Challenges in recruitment and face-to-face interview of research participants

Recruitment is a discussion between a possible participant and a researcher before initiating the consent process. It is possibly the most challenging part of a research study. It starts with the identification, targeting and enrolment of participants for a research study (Patel et al., 2003). Recruiting adequate participants is very important to meet the sample size and power of recruitments of the study and to adequately represent the target population (Patel et al., 2003). Recruitment and data collection challenges can disturb the research project, researcher and participants, and can reduce the ability to answer the research questions and achieve the study objectives. The following challenges were encountered during the recruitment and data collection in the current study:

**Obtaining consent**

- When going through the patient information sheet, some patients did not understand the purpose of the study and some of them were reluctant to take part.
- Others were reluctant to sign the consent form despite agreeing to all the listed criteria; they did not understand the need for a signature and the importance of giving consent. They thought signing the form would bring additional responsibilities.
- Some patients were unhappy to be audio-recorded but when the researcher explained the reason for audio-recording, they agreed.
• Many participants were reluctant to share their information or concerns with their pharmacist or GP because they thought that this would affect their current treatment regimens.

• None of the participants declined to have their MURs or PMR records interrogated. Possible explanations for this could be that, unlike GP surgeries, pharmacies hold limited patient information, thus this was not a cause for concern; or, the pharmacist was present to personally validate the trustworthiness of the researcher.

• Barriers were found in patients speaking English or Arabic less fluently. Others were able to speak English or Arabic but were unable to read or write the language. This led the researcher or the person presenting during the interview to translate or read the patient information sheet (PIS) out loud and consequently the interview took longer to complete.

Data collection method

• Understanding what each question of Gordon’s tool was proposing was found to be difficult for some SA and ME patients. The researcher had to rephrase the question to be understood or add probes on several questions, which led to participants becoming annoyed.

• Using numerous tools (n=3) increased the researcher burden and made some participants feel frustrated and annoyed because of the length of time each instrument took to administer.

Recruitment techniques

• Identifying eligible participants through MURs and PMR records was challenging. This was because in almost all the pharmacies there were only a few computers, and these computers were used by the staff to dispense medicines almost all the time rather than to identify eligible patients. In addition, asking the pharmacists to identify eligible participants was difficult because they were busy all the time. Moreover, it was not easy for all pharmacists to identify participants’ ethnicity through PMR or MUR especially if the pharmacists were locums.

4.3 Mean length of interviews, start time of the interviews and presence of other people during the interviews

The mean length of the interviews for the 80 participants was 25 minutes (SD 8 minutes, range 15-55, median 20 minutes). The mean of the interviews’ start time was 12 noon (SD 2 hrs, range 9.15am – 4.45pm, median 12 noon). Thirty-seven participants (91%) presented alone during the interview whereas seven (9%) were
with a family member. The researcher reminded the participants who presented with a family member about the importance of the responses being taken from the participants themselves. In the case where the family member gave his/her response, the researcher directed the question back to the participant and re-emphasised the importance of the participant’s individual answers to questions.

There were differences between SA and ME groups in the length and location of interview. For the SA, the mean length of the interview was 22.6 minutes (SD 6.9, range 15-45 minutes). The mean length of the interview for ME participants was 26.6 minutes (SD 8.8, range 15-55 minutes). The duration of the interview for the MEs was significantly longer than the length of the interview for the SAs (t-test, \( P = 0.026 \)).

The interview took a longer time to complete with patients who were illiterate in English or preferred to do the interview in their own language (e.g., Arabic participants). This is possibly because the researcher had to translate the patient information leaflet and the consent form into the participant’s own language. Additionally, Arab participants felt more comfortable to discuss their issues and needs openly in detail in their own language, which took more time than other participants who did it in their second language (i.e., English). Other participants also took more time to complete the interview not because of the language but because their ability to understand the reason and the depth of each question was poor and thus the researcher had to answer their queries and re-phrase the questions to the patients’ level of understanding. The length of the interview was associated with whether a participant was more or less likely to be identified with a MRP (t-test, \( P = 0.029 \)).

The ME group also had significantly more privacy during the interview than the SA group (chi-square test, \( P = 0.004 \)). Twenty-five (63%) ME participants were interviewed in a private consultation room in the pharmacy whereas 28 (70%) of SA participants were interviewed in an open area in the pharmacy where the interview could be over heard. Conducting the interview in a private consultation room was
associated with whether a participant was more likely to be identified with an MRP (chi-square test, $P=0.035$). The longer the interview and the presence of a private environment may have meant that there was more time and a proper place to identify problems. These findings were consistent with Gordon et al.’s study (2007) which found that the length and place of the interview (i.e., home interviews) were associated with whether a participant was more likely to be identified with a MRP because patients feel more relaxed in their own homes and have more time to describe their medication- and illness-related experiences, concerns, problems and needs.

**Key messages from Chapter 4**

- Visiting pharmacies in person was the best method of recruitment. Therefore, in order to increase the response rate, an in-person visit should be made to non-responding pharmacies two weeks after sending the invitation letter.
- The present study showed that SA and ME patients were willing to participate in the current study unlike what was reported by some of the previous studies.
- Approaching the patient in-person by a HCP whom the patient knows and/or by a researcher who speaks the same language and/or is from the same culture might increase the response rate.
- The language barrier should be addressed to overcome one of the major obstacles of the recruitment process that is beyond the patient’s control especially given that non-English-speaking patients might be more likely to experience MRPs.
- Many challenges were encountered during the recruitment and data collection process; these challenges should be addressed and taken into account when recruiting patients from the same origins.
- Strengths of the study include a diversity of participants‘ characteristics, making these findings relevant for a wide range of ME and SA patients.
- The longer the interview and the presence of private environment may have meant that patients are more likely to be identified with a MRP.
Chapter 5  A description of the MRPs and contributory factors to the MRPs that may be similar to the general population from patients’ perspectives

Introduction

This chapter is divided into two parts. The first part, section 5.1, reports the number and types of MRPs that were identified during the current study using the Gordon coding frame. It also examines in detail the individual MRPs within their categories. The second part, section 5.2, describes the reasons that may contribute to MRPs that may be similar to the general population, along with direct quotes from participants’ interviews.

5.1  A description of the medicine-related problems documented at the interviews

The MRPs were classified and grouped into four categories of medicine-use issues and five categories of service-use issues. The medicine-use issues were divided into four categories, which were ADRs and DI, intentional non-compliance, cognitive, physical and sensory problems, and problems with non-prescription medicines. Service-related issues were divided into five categories which were drug-prescribing problems, problems with interface, monitoring and review, lack of information and discussion, problems with repeat prescriptions, and GP surgery and pharmacy problems. Table 5-1 outlines the number and percentages of MRPs identified in the current study.
Table 5-1: Number and percentage of MRPs identified for the 73 interview participants.

<table>
<thead>
<tr>
<th>MRP category</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intentional non-compliance</td>
<td>84</td>
<td>44</td>
</tr>
<tr>
<td>Cognitive, physical and sensory problems</td>
<td>55</td>
<td>29</td>
</tr>
<tr>
<td>Adverse drug reactions and drug interactions</td>
<td>44</td>
<td>23</td>
</tr>
<tr>
<td>Problems with non-prescription medicines</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total medicine-use issues</strong></td>
<td>190</td>
<td>100</td>
</tr>
<tr>
<td>GP surgery and pharmacy service problems</td>
<td>66</td>
<td>45</td>
</tr>
<tr>
<td>Problems with repeat prescriptions</td>
<td>34</td>
<td>23</td>
</tr>
<tr>
<td>Lack of information or discussion</td>
<td>24</td>
<td>16</td>
</tr>
<tr>
<td>Drug-prescribing problems</td>
<td>19</td>
<td>13</td>
</tr>
<tr>
<td>Interface, monitoring and review problems</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total service-use issues</strong></td>
<td>148</td>
<td>100</td>
</tr>
</tbody>
</table>

Seventy-three participants were identified with a total of 338 MRPs (mean of four MRPs per participant), 190 (56%) of which were medicine-use issues and 148 (44%) were service-use issues. Intentional non-compliance, cognitive, physical and sensory problems, GP surgery and pharmacy service problems were most commonly identified at the interviews. These results may not be surprising, given that patients included in the current study had multiple chronic conditions, were taking a mean of eight medicines and were from ethnic minority backgrounds, thus placing them at high risk of MRPs. Seventy-three of 80 interview participants (91%) had at least one MRP. Figure 5-1 gives the number of interview participants having at least one MRP in each category.
Chapter 5 – Results (A description of the MRPs and contributory factors to the MRPs that may be similar to the general population from patients’ perspectives)

Figure 5-1: The number of interview participants having at least one MRP in each category.

Participants were grouped into those having medicine-use issues only (n=20), participants with service-use issues only (n=4), and those with medicine-use and service-use issues combined (n=49) (Appendix 24). Case studies were made for the 73 participants assigned to at least one MRP at the interviews. Each case study was given a number corresponding to the identification number, a short description of the participant (age, ethnicity, gender, and names of medicines used) and the MRPs with which they were identified.

5.1.1 MRP category 1 – Adverse drug reaction and drug interactions

Problems classified as ADRs and DIs documented at the interviews consisted of:

- 101 Side effect: 42 participants
- 102 Hypersensitivity: 1 participant
- 103 Drug-drug interaction: 1 participant

Total adverse drug reactions and drug interactions: 44

<table>
<thead>
<tr>
<th>MRP Category</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interface, monitoring and review problems</td>
<td>5</td>
</tr>
<tr>
<td>Problems with non-prescription medicines</td>
<td>6</td>
</tr>
<tr>
<td>Drug prescribing problems</td>
<td>17</td>
</tr>
<tr>
<td>Lack of information or discussion</td>
<td>22</td>
</tr>
<tr>
<td>Problems with repeat prescriptions</td>
<td>29</td>
</tr>
<tr>
<td>GP surgery and pharmacy service problems</td>
<td>32</td>
</tr>
<tr>
<td>Adverse drug reactions and drug interactions</td>
<td>33</td>
</tr>
<tr>
<td>Intentional non-compliance</td>
<td>43</td>
</tr>
<tr>
<td>Cognitive, physical and sensory problems</td>
<td>44</td>
</tr>
</tbody>
</table>
ADRs and DIs constituted almost a quarter (23%) of the 190 medicine-use issues identified at the interviews. Thirty-three participants were identified with 44 ADRs and DIs. The majority of these problems were side effects. Drug interactions and hypersensitivity were among the least common MRPs identified from this category, possibly because the use of computerised checks by physicians for drug interaction and hypersensitivity reduced the number of DIs and drug sensitivity identified in this study.

Thirty-one participants who reported side effects revealed one or more symptoms relating to the use of one or more medicines. Some had experienced side effects in the past and others still did. When adverse reactions were revealed, most participants were certain about which medicines caused the side effect. Table 5-2 lists the reported side effects mentioned by participants in the current study and the medicines causing reactions using their own words. Although the British National Formulary cites a wide range of side effects for medications, some patients attributed side effects that the BNF does not list. Feelings of dizziness, sickness, tiredness and stomach upset were the most commonly reported reactions. Drugs used in diabetes, lipid-regulating drugs, and drugs used in rheumatic disease were the most commonly recognised medicines as producing a high incidence of side effects.

In relation to drug-drug interaction, there was a participant [Case 311-AR-F-45] who was prescribed a tricyclic antidepressant [Amitriptyline] and a selective serotonin re-uptake inhibitor [fluoxetine]. A patient already being treated with a tricyclic antidepressant may experience significant increases in plasma antidepressant concentrations (and possibly antidepressant toxicity) when fluoxetine is added (Preskorn et al., 1990). When concomitant use of selective serotonin re-uptake inhibitors (SSRI) and tricyclic antidepressant is required, the patient should be monitored for anticholinergic excess. Conservative dosing of the tricyclic antidepressant should also be considered.
<table>
<thead>
<tr>
<th>Number of participants</th>
<th>BNF chapter</th>
<th>Name of medicine</th>
<th>Reported symptoms*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.5</td>
<td>Mesalazine</td>
<td>Aches and pains</td>
</tr>
<tr>
<td>1</td>
<td>2.4</td>
<td>Atenolol</td>
<td>Headache</td>
</tr>
<tr>
<td>1</td>
<td>2.5</td>
<td>Irbesartan</td>
<td>Constipation</td>
</tr>
<tr>
<td>3</td>
<td>2.6</td>
<td>Amlodipine</td>
<td>Swollen legs and lethargy/dizziness</td>
</tr>
<tr>
<td>1</td>
<td>2.6</td>
<td>Nicorandil</td>
<td>Dizziness</td>
</tr>
<tr>
<td>1</td>
<td>2.9</td>
<td>Aspirin</td>
<td>Stomach bleeding and itchy rash</td>
</tr>
<tr>
<td>1</td>
<td>2.12</td>
<td>Atorvastatin</td>
<td>Breathlessness or shortness of breath</td>
</tr>
<tr>
<td>2</td>
<td>2.12</td>
<td>Rosuvastatin</td>
<td>Muscle pain and weakness/Skin pigmentation</td>
</tr>
<tr>
<td>3</td>
<td>2.12</td>
<td>Simvastatin</td>
<td>Hair loss/stomach upset/itchy spots around the tummy</td>
</tr>
<tr>
<td>1</td>
<td>4.1</td>
<td>Diazepam</td>
<td>Internal skin rash and itching</td>
</tr>
<tr>
<td>1</td>
<td>4.1</td>
<td>Zolpidem</td>
<td>Internal skin rash and itching</td>
</tr>
<tr>
<td>1</td>
<td>4.4</td>
<td>Venlafaxine</td>
<td>Dry skin and dry mouth</td>
</tr>
<tr>
<td>1</td>
<td>4.8</td>
<td>Tegretol</td>
<td>Indigestion</td>
</tr>
<tr>
<td>3</td>
<td>6.1</td>
<td>Insulin</td>
<td>Weight gain/stomach upset and dry mouth/feeling sweaty and tired.</td>
</tr>
<tr>
<td>1</td>
<td>6.1</td>
<td>Gliclazide</td>
<td>Abdominal pain and bloating and dizziness.</td>
</tr>
<tr>
<td>8</td>
<td>6.1</td>
<td>Metformin</td>
<td>Dizziness, loss of appetite and stomach pain/weight loss/abdominal pain and bloating/constipation/tachycardia and tiredness/heartburn/felling sick and noxious/tiredness, legs’ weakness, stomach problem.</td>
</tr>
<tr>
<td>1</td>
<td>6.1</td>
<td>Pioglitazone</td>
<td>Rash</td>
</tr>
<tr>
<td>1</td>
<td>6.1</td>
<td>Repagliflozin</td>
<td>Dizziness</td>
</tr>
<tr>
<td>2</td>
<td>6.6</td>
<td>Alendronic acid</td>
<td>Itchy rash/fever, shortness of breath and abdominal pain</td>
</tr>
<tr>
<td>1</td>
<td>7.4</td>
<td>Fesoterodine</td>
<td>Dry skin and dry mouth</td>
</tr>
<tr>
<td>3</td>
<td>10.1.1</td>
<td>Diclofenac</td>
<td>Stomach ulcer/vomiting/stomach pain</td>
</tr>
<tr>
<td>1</td>
<td>10.1.3</td>
<td>Adalimumab (Humira’s)</td>
<td>Itchy rash and redness of the skin</td>
</tr>
<tr>
<td>1</td>
<td>10.1.3</td>
<td>Hydroxychloroquine</td>
<td>Headache, earache, vertigo and dizziness</td>
</tr>
<tr>
<td>2</td>
<td>10.1.3</td>
<td>Methotrexate</td>
<td>Feeling sick and having dizziness, drowsiness and nausea/mood changes and stress</td>
</tr>
</tbody>
</table>

* Where more than one participant reported symptoms caused by a particular medicine, the different patients’ symptoms have been separated by a forward slash (/)
5.1.2 MRP category 2 – Intentional non-compliance

Problems categorised as intentional non-compliance documented at the interviews comprised:

- 201 Under-use of POMs 42
- 202 Over-use of POMs 24
- 207 Unsure of dosing 1
- 208 Stop taking medicines 3
- 209 Split dose when should be one dose 1
- 212 Problems with dosage form 4
- 213 Taking daily doses all together at once when they should be split 3
- 214 Taking medicine at the wrong time 4
- 216 Taking someone's else prescription medication 2

Total intentional non-compliance 84

Intentional non-compliance accounted for almost half of the 190 medicine-use issues identified at the interviews. Forty-three participants were identified as having 84 instances of intentional non-compliance. However, only 21 participants reported adjusting doses of their medicines when asked to self-report their intentional non-compliance. Participants were given the opportunity to clarify their responses on a Likert scale. The Likert responses are illustrated in Table 5-3.
Table 5-3: Number and percentage of interview participants self-reporting the frequency of their intentional non-compliance using a Likert scale.

<table>
<thead>
<tr>
<th>Question on non-compliance (intentional non-compliance and cognitive problems)</th>
<th>Number (n) and percentage (%) of interview participants self-reporting the frequency of their non-compliance using a Likert scale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never</td>
</tr>
<tr>
<td>'Some people do not always take their medicines according to the instructions, but adjust the dose according to what they think they need. Do you do this?</td>
<td>59</td>
</tr>
</tbody>
</table>

Regarding adjusting doses of their medicines, the majority (74%) revealed that they never adjusted a dose of a medicine. The participant who reported ‘rarely’, offered an additional explanation which was mainly attributed to a side effect of a medicine. All but one participant who reported ‘sometimes’ gave additional information. The majority of reports (n=10) were based on reducing the daily prescribed dose. Two participants stated taking a medicine at the wrong time: one explained that this was because he had lack of understanding and information on when to take the medicine. The second participant reported taking two tablets of Adcal® at once in the morning when the medicine should be taken as one tablet twice daily; she declared that she did this in order to avoid forgetting her evening dose of Adcal®. Another two participants stated overusing the daily prescribed dose to control their symptoms. Participants who reported that they adjusted their doses ‘sometimes’ adjusted the number of doses per month, for instance once, twice or three times a month. All the participants who reported ‘often’ offered an additional explanation. The majority of reports (n=3) were based on reducing the daily prescribed dose except one which was based on increasing the daily prescribed dose. Participants who revealed that they adjusted their doses ‘often’ adjusted the number of doses per week, for instance once, twice or three times a week rather than the recommended seven days a week. The two participants who adjusted their doses ‘very often’ omitted the medicines for periods of time. They offered an additional explanation which was due to a side effect of a medicine.
It can be seen that assessing patients’ adherence to their medication is not a straightforward task, as it is difficult to extrapolate a pattern between data from different methods. What a patient reported was sometimes different or even conflicting to what was identified by the researcher. For instance, based on the MRPs questionnaire, participant [Case 205-AR-F-57] reported that she ‘never’ adjusted a dose of a medicine; however, when asked about fasting, she revealed modifying the dose in Ramadan, which produced contradictory information. A further example is participant [Case 209-AR-M-49] who revealed that he ‘never’ adjusted a dose of a medicine. However, when asked more in-depth questions, he declared a delay in renewal of the repeat prescription after his supply of diabetic and BP medicines ran out on different occasions which made him take diabetic and BP medicines that were prescribed for his mother until he ordered a repeat prescription. This was considered by the researcher to be poor compliance. Thus, the researcher’s judgment was taken into account when reporting the percentages of compliant and non-compliant participants. It can be concluded that patients in this study did not perceive themselves as non-compliant individuals; rather they viewed themselves as being empowered people to manage their own health and healthcare and to decide what is the best for them. In general, the accuracy of self-report behaviour is problematic. However, research suggests that people who say they do not follow treatment usually report accurately, but those who report that they follow treatment recommendations usually report inaccurately (Spector, 1986). Table 5-4 shows the number of reports and types of medicines implicated in intentional non-compliance.
### Table 5-4: Number of participants and types of medicines implicated in intentional non-compliance.

<table>
<thead>
<tr>
<th>BNF chapter</th>
<th>Name of medicine implicate</th>
<th>Under-use</th>
<th>Over-use</th>
<th>Unsure of dosing</th>
<th>Stopped</th>
<th>Split dose</th>
<th>Problems with dosage form</th>
<th>Taking daily dose at once</th>
<th>Taking medicine at the wrong time</th>
<th>Taking someone’s else prescription medication</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(201)</td>
<td>(202)</td>
<td>(207)</td>
<td>(208)</td>
<td>(209)</td>
<td>(212)</td>
<td>(213)</td>
<td>(214)</td>
<td>(216)</td>
</tr>
<tr>
<td>6.1</td>
<td>Insulin</td>
<td>42</td>
<td>24</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>6.1</td>
<td>Metformin</td>
<td>13</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>6.1</td>
<td>Gliclazide</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1.6</td>
<td>Senna</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10.1.3</td>
<td>Hydroxychloroquine</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5</td>
<td>Ramipril</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2.4</td>
<td>Metoprolol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>1.3</td>
<td>Omeprazole</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.1.1</td>
<td>Ibuprofen</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3</td>
<td>Mirtazapine</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.6</td>
<td>Prochlorperazine</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.1</td>
<td>Pioglitazone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.1.1</td>
<td>Diclofenac</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7.4</td>
<td>Esotroderine</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td>Salbutamol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2.12</td>
<td>Atrovastatin</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.12</td>
<td>Simvastatin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>1.3</td>
<td>Lanzoprazole</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Number of participants reporting problem: 42, 24, 1, 3, 1, 4, 3, 4, 2.
## Chapter 5 – Results (A description of the MRPs and contributory factors to the MRPs that may be similar to the general population from patients’ perspectives)

<table>
<thead>
<tr>
<th>BNF chapter</th>
<th>Name of medicine implicate</th>
<th>Under-use</th>
<th>Over-use</th>
<th>Unsure of dosing</th>
<th>Stopped</th>
<th>Split dose</th>
<th>Problems with dosage form</th>
<th>Taking daily dose at once</th>
<th>Taking medicine at the wrong time</th>
<th>Taking someone's else prescription medication</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.6</td>
<td>ISMN</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2</td>
<td>Beclometasone</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.6</td>
<td>Vitamins</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.6</td>
<td>Betaistine</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.7</td>
<td>Lidocaine hydrocortisone</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2</td>
<td>Risperidone</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1</td>
<td>Diazepam</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1</td>
<td>Temazepam</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.7</td>
<td>Co-codamol</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3</td>
<td>Amitriptyline</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.6</td>
<td>Adcal-D3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td>Salmeterol</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3</td>
<td>Fluoxetine</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2</td>
<td>Seretide</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.6</td>
<td>Cholecalciferol + Calcium carbonate</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1</td>
<td>Zolpidem</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.6</td>
<td>GTN</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5</td>
<td>Doxazosin</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.4</td>
<td>Propranolol</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2</td>
<td>Quetiapine</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.6</td>
<td>Azelaic acid cream and Tretinoin GEL</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

166
Chapter 5 – Results (A description of the MRPs and contributory factors to the MRPs that may be similar to the general population from patients’ perspectives)

Drugs used for diabetes (BNF chapter 6.1), lipid regulating drugs (BNF chapter 2.12) and ulcer-healing drugs (BNF chapter 1.3) were most frequently involved in intentional non-compliance. Twenty-six participants were identified with medication underuse and 13 participants were identified with medication overuse. Both were mainly associated with use of anti-diabetic medicines especially Metformin. Users of anti-diabetic drugs described that they experienced dizziness, loss of appetite, stomach upset, weight loss or gain, abdominal pain and bloating, constipation, tiredness, sickness, and weakness when taking anti-diabetic drugs. Side effects caused by anti-diabetic drugs accounted for (14/42, 33%) of the total side effects. Experiencing side effects as well as patients’ perceived need for medication (i.e., controlled sugar level) were the most commonly reported reasons for non-compliance in the use of anti-diabetic medications in the present study.

The wide range of issues categorised as intentional non-compliance in the current study showed the way in which some patients adjusted their medicines irrespective of the instruction and advice given by HCPs. Intentional non-compliance manifested in the form of changing dosage amount, frequency or time of day medicine was taken, discontinuing using prescribed medication, initiating taking someone else’s medications for perceived common symptoms, combining treatments – such as medications shared among family and community members, over-the-counter (OTC) medications, medications brought from abroad/home countries, and herbal and other traditional medicines.
Chapter 5 – Results (A description of the MRPs and contributory factors to the MRPs that may be similar to the general population from patients’ perspectives)

5.1.3 MRP category 3 – Cognitive, physical and sensory problems

Problems categorised as cognitive, physical and sensory problems documented at the interviews consisted of:

301 Forgetting to take medicine(s) 39
302 Difficulty opening containers/packs 10
303 Difficulty reading labels 3
304 Difficulty hearing instructions 2
305 Difficulty swallowing 1

Total cognitive, physical and sensory problems 55

Forty-six participants were identified by the researcher with 55 cognitive, physical and sensory problems, the majority of which were cognitive problems (n=39/55, 71%), which was consistent with what was reported by participants when asked to self-report their unintentional non-compliance on a Likert scale. The Likert responses are illustrated in Table 5-5.

Table 5-5: Number and percentage of interview participants self-reporting the frequency of their unintentional non-compliance using a Likert scale.

<table>
<thead>
<tr>
<th>Question on non-compliance (intentional non-compliance and cognitive problems)</th>
<th>Number (n) and percentage (%) of interview participants self-reporting the frequency of their non-compliance using a Likert scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘People sometimes forget to take their medicines. Do you do this?’</td>
<td>Never</td>
</tr>
<tr>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>34</td>
<td>42%</td>
</tr>
</tbody>
</table>

Regarding forgetting to take medicines, again the majority (42%) reported that they ‘never’ forgot. Similarly, the additional information provided by participants was alike and had a clear boundary, just like the additional information provided for adjusting the doses of their medicines. For 15 of the 17 who reported ‘rarely’ response, the responses ranged from once or twice a year to once or twice every six...
months. Participants who revealed that they forgot their doses ‘sometimes’ forgot the number of doses per month, for example once, twice or three times a month. The eight participants who revealed forgetting ‘often’ defined this as once or twice a week and those (n=3) who reported forgetting to take their daily prescribed dose ‘very often’ defined this as once or twice a day. Ten participants reported difficulties opening containers/packs, difficulties reading labels (n=3), hearing instructions (n=2) and swallowing (n=1). These problems can be potential obstacles to compliance.

As regards cognitive problems, the majority of participants (n=36) did not specify an individual medicine, but reported forgetting all or any of their medicines at any one time. Only 10 participants of 46 reported forgetting to take a specific medicine. Lipid-regulating drugs (BNF chapter 2.12) were most frequently involved in cognitive non-compliance (3/10) because patients did not perceive the importance of adhering to medication that is used for preventive purposes and symptomless conditions. Statins were also the only medicine that was taken at night by those participants.

5.1.4 MRP category 4 – Problems with non-prescription medicines

Problems with non-prescription medicines documented at the interviews consisted of:

402 Interaction with POMs 3
403 Contra-indication 1
405 Lack of knowledge about non-prescription medicines 3

Total problems with non-prescription medicines 7

Six participants were identified with seven problems with non-prescription medicines. One participant was prescribed Co-dyramol (containing Paracetamol) for pain in a hospital A&E department but also used over-the-counter (OTC) Paracetamol. The duplication of these two Paracetamols can potentially cause liver
injury. One asthmatic participant revealed taking Ibuprofen as an OTC medicine, which is contraindicated in asthmatic patients. She was prescribed Citalopram (SSRIs) and also took Ibuprofen. The risk of bleeding may increase when Ibuprofen is taken with SSRIs. Another participant declared taking Aspirin as an OTC medicine one tablet a day and he was also prescribed Etoricoxib for pain by his GP. Concomitant use of low-dose Aspirin with Etoricoxib may result in an increased rate of GI ulceration or disorder. Three participants could not recall the reasons for taking their OTC medicines. It was identified that all the six participants were aged 65 or less than 65 (range 35-64 years). All were first generation and lived with their families; three out of six reported receiving information and advice on medicines from their families. In addition, all the six participants were using eight or less POMs (range 6-8 POMs). The findings showed that participants who were younger and used a small number of medicines might be more likely to be identified with non-prescription medicines problems. However, this cannot be generalised as only six participants were identified with problems with non-prescription medicines.

5.1.5 MRP category 5 - Problems with drug-prescribing

Problems with drug-prescribing documented at the interviews consisted of:

501 Drug missing from regime 3
502 Therapeutic duplication 4
503 Use of drug to treat adverse effect of another drug 6
504 Inappropriate dose (too high or low) 1
506 Drug should not be in the regime 1
507 Inappropriate length of treatment 4

Total drug-prescribing problem 19

Seventeen participants were identified with 19 drug-prescribing problems. The problems associated with drug-prescribing could have been caused by GPs or
hospital consultants. Table 5-6 shows the medicines implicated in the drug-prescribing problems. Two participants (case 303-AR-F-53, case 713-IN-M-64) of the seventeen who identified with drug-prescribing problems were each identified with two drug-prescribing problems.

In this study, (19/190; 10%) drug-prescribing problems were identified in SA and ME patients during pharmacy interviews, which is considered to be low. This is possibly because information such as blood results or patients’ medical histories was not available to allow full assessment of medication safety. Thus, the researcher had to rely on patient’s experience and information to make a judgment about whether the patient had a drug-prescribing problem.

Table 5-6: The types of medicines associated with drug-prescribing problems shown for each participant.

<table>
<thead>
<tr>
<th>MRP code</th>
<th>MRP category</th>
<th>Case number</th>
<th>BNF category</th>
<th>Names of medicines involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>501</td>
<td>Drug missing from regime</td>
<td>202-AR-F-61; 601-PAK-F-65; 713-IN-M-64</td>
<td>1.3</td>
<td>Omeprazole</td>
</tr>
<tr>
<td>502</td>
<td>Therapeutic duplication</td>
<td>311-AR-F-45</td>
<td>1.3</td>
<td>Ranitidine and Omeprazole</td>
</tr>
<tr>
<td></td>
<td></td>
<td>504-PAK-M-81</td>
<td>4.7</td>
<td>Paracetamol and Codamol</td>
</tr>
<tr>
<td></td>
<td></td>
<td>713-IN-M-64</td>
<td>11.8</td>
<td>Celluvisc eye drops and Hymorrhology eye drops</td>
</tr>
<tr>
<td></td>
<td></td>
<td>107-OSA-M-57</td>
<td>1.6</td>
<td>Senna and Docusate</td>
</tr>
<tr>
<td>503</td>
<td>Use of drug to treat adverse effect of another</td>
<td>604-AR-F-52</td>
<td>4.6 and 12.1</td>
<td>Betahistin and Otomize</td>
</tr>
<tr>
<td></td>
<td></td>
<td>603-IN-M-51</td>
<td>10.1.1</td>
<td>Diclofenac</td>
</tr>
<tr>
<td></td>
<td></td>
<td>602-PAK-M-54</td>
<td>3.4</td>
<td>Antihistamine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>204-AR-F-45; 306-AR-M-47</td>
<td>1.3</td>
<td>Omeprazole</td>
</tr>
<tr>
<td></td>
<td></td>
<td>305-AR-F-32</td>
<td>4.6</td>
<td>Metoclopramide</td>
</tr>
<tr>
<td>504</td>
<td>Inappropriate dose</td>
<td>701-IN-M-77</td>
<td>2.3</td>
<td>Amiodarone</td>
</tr>
<tr>
<td>506</td>
<td>Drug should not be in regime</td>
<td>507-AR-F-39</td>
<td>4.1</td>
<td>Zolpidem</td>
</tr>
<tr>
<td>507</td>
<td>Inappropriate length of course</td>
<td>207-AR-F-40</td>
<td>2.8</td>
<td>Warfarin</td>
</tr>
<tr>
<td></td>
<td></td>
<td>303-AR-F-53</td>
<td>4.1</td>
<td>Zopiclone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>507-AR-F-39</td>
<td>4.1</td>
<td>Zolpidem</td>
</tr>
<tr>
<td></td>
<td></td>
<td>303-AR-F-53</td>
<td>4.1</td>
<td>Diazepam</td>
</tr>
<tr>
<td></td>
<td></td>
<td>404-AR-M-45</td>
<td>4.1</td>
<td>Temazepam</td>
</tr>
</tbody>
</table>
5.1.6 MRP category 6 – Interface, monitoring and review problems

Problems with interface, monitoring and review documented at the interviews consisted of:

602 Inadequate monitoring or review reported by participants 3
603 Inadequate transfer of information from hospital to GP 2

Total interface, monitoring and review problems 5

Five participants were identified with five interface, monitoring and review problems. Two of the three participants visited a GP or a nurse for consultations every four months or more frequently but they revealed that they were not adequately monitored or reviewed. One participant revealed that he sometimes did not consult a GP in a year. Two participants had concerns that information was not transferred from hospital to GPs.

When asked about how often they consulted a GP or practice nurse at the GP surgery, all the participants consulted a GP (n=76) and the majority consulted their GP ≤6 months (n=67/76, 88%). Forty-six participants (60%) consulted a nurse and 30 of them (65%) consulted the nurse ≤6 months. However, 30 (40%) participants reported that they never consulted a nurse. Although the majority of participants consulted a GP and/or a nurse every six months or more frequently, some reported inadequate discussion of their illness and medicines. Reasons for why there was a lack of discussion were highlighted by some participants, such as lack of time or doctors to review patients, bad relationship with doctor, lack of trust and confidence in healthcare professionals and healthcare system.
5.1.7 MRP category 7 – Lack of information or discussion

Lack of information or discussion documented at the interviews comprised:

- Inadequate information on medicines: 18
- Inadequate information on illness: 6
- Total lack of information or discussion: 24

The researcher identified 22 participants with 24 problems associated with lack of information on illness or medicines. Lack of information was identified from participants’ descriptions of how they took their medicines. The 79 interview participants were asked to name or describe at least four of the POMs they used. The four POMs were randomly selected by the researcher. The reason for selecting only four medicines was because some participants during the pilot felt under pressure to name all their medicines. In addition, the lack of time and appropriate place hindered asking patients about all their medicines. However, it is unlikely that patients who know all the basic information on at least four of their medicines will not know about their other medicines which were not selected by the researcher. Patients were also asked about the purpose for which the medicine was prescribed, dosing frequency and length of time for which they had been using the medicine. Participants’ responses were compared with information on the names of medicines, and the dosing frequencies of medicines obtained from patients’ medication records available at the pharmacies. Table 5-7 shows the participants’ knowledge of their POMs.
Table 5-7: Number and percentage of participants reporting details of their prescription medicines (n=79).

<table>
<thead>
<tr>
<th>Details of medicine</th>
<th>Number (n) and percentage (%) of MRPs interview schedule participants able to report details of prescription medicines</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All medicines (n=4)</td>
</tr>
<tr>
<td></td>
<td>N</td>
</tr>
<tr>
<td>Name of medicine</td>
<td>31</td>
</tr>
<tr>
<td>Dosing Frequency of medicine</td>
<td>61</td>
</tr>
<tr>
<td>Purpose for which medicine is used</td>
<td>62</td>
</tr>
<tr>
<td>Length of time for which medicine has been used</td>
<td>73</td>
</tr>
</tbody>
</table>

When asked to name at least four of their medicines, only 31 (39%) participants were able to correctly do so. More participants were able to identify the correct purpose or give a description of the symptoms for which they were using their medicines – 62 (79%). In addition to this, 61 (76%) participants were able to recall dosing frequencies and 73 (93%) were able to recall the approximate length of time for which they had been using their medicines. In general, although the majority of patients could not pronounce or provide the names of their medicines, they knew their indication and dosing instruction when the name was pronounced or shown on the prescription by the researcher. However, participants in this study reported many problems with source, delivery, type and timing of information.
5.1.8 MRP category 8 – Problems with repeat prescriptions

Repeat prescriptions problems documented at the interviews comprised:

803 Run out of medicine and did not order anymore 1
804 Medicines no longer used remain on form 2
806 Delay renewals after supplies run out 31

Total problems with repeat prescriptions 34

The majority of participants revealed regular frequencies with which they obtained their prescriptions: every month (n=43, 54%), every two months (n=27, 34%) or every three months (n=4, 5%). Five participants revealed variable frequencies with which they obtained their prescriptions: two reported every 1-2 months and three reported every 4-6 weeks. In the interviews, various issues with prescribing and issuing repeat prescriptions were exposed in which 31 participants were identified with 34 repeat prescribing problems.

5.1.9 MRP category 9 – GP surgery and pharmacy service problems

GP surgery and pharmacy service problems documented at the interviews consisted of:

901 Difficulty getting appointments to see GP 20
902 Difficulty consulting the practice nurse 1
903 Difficulty consulting the pharmacist 1
905 Problems with pharmacy supplying medicines from various manufacturers 2
906 Pharmacy never have complete stock 2
907 No information leaflet supplied from pharmacy 2
909 Difficulty consulting the same GP 8
Chapter 5 – Results (A description of the MRPs and contributory factors to the MRPs that may be similar to the general population from patients’ perspectives)

910 Lack of hospital referral 5

911 Long waiting time in GP 8

912 The short length of consultation 11

913 The attitude of GP staff 6

Total GP surgery and pharmacy service problems 66

Thirty-two participants were identified with 66 GP surgery and pharmacy service problems. Patients’ perceptions of and views towards their GP surgeries were highly negative. Many patients were unable to make appointments with their GP with the waiting times being too long and the consultation times being too short. Others were unable to see the same GP or a GP from the same gender.

The previous part, section 5.1, reports the number and types of MRPs that were identified during the current study. The next part, section 5.2, describes the reasons which may contribute to MRPs that may be similar to the general population.

5.2 Contributory factors to medicine-related problems that were identified to be similar the general population

5.2.1 Concerns about and management of side effects

The side effects had led participants to deal with and react to them in different ways; some respondents reacted more than ones to resolve the problem. Participants reacted by stopping taking their medicines or by modifying the way they took their medicines, others accepted and tolerated the side effects associated with their medicines and made no changes to their medications, and the rest coped with side effects by some other means. Some of their actions indicated altered medication-taking behaviour. These reactions were either self-guided or professionally guided. However, consulting a doctor did not always lead to adherent medication taking.
Some participants did not accept the side effects associated with their medicines and reacted by deliberately stopping/taking less of their medicines (i.e., reducing the dosage of their medicines or skipping taking tablets for a few days each week or each month) without consulting a doctor to avoid/relieve these adverse effects. These participants perceived the risk of taking their medicines to outweigh their benefits:

“Doctor gave me the 5 gram [Ramipril], 3-4 year use it. This year I am not use this tablet 3-4 days now, 1 week I had some tummy, tomach, tomach... This tablet is problem!” [Case 601-PAK-F-65]

“If I feel like I have a SE from a medicine, I try not to carry on, to see what the effect will be... For example, I have this one [Pioglitazone], when I take it I feel rash on my hands... I think this medicine is affecting my liver so I stopped it just to find out whether this tablet is the cause of the rash.” [Case 203-AR-M-63]

Other participants in this study reported raising their concern to their doctor when experiencing a side effect. Their fears of side effects were large to the extent that they could not wait to find out if the reaction would disappear without consulting a doctor. Those who discussed the problem with their doctor reported that the doctor advised them both to cope with and tolerate the side effects of the medicine or advised them to stop taking the medicine or made some or no changes to the medicine. The changes made were reducing the dose, changing the medicine to another one, prescribing a medicine to treat the SE of the other or changing the dosage form of the medicine anticipating that the reaction would disappear. Table 5-8 illustrates quotes supporting these findings.
Table 5-8: Quotes of participants highlighting some changes made to their medicines as a consequence of experiencing side effects with them.

<table>
<thead>
<tr>
<th>Changes made by doctors</th>
<th>Quotes</th>
<th>Patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coping with side effect</td>
<td>“Yes, especially with my BP tab Amlofedia [Amlodipine]... It happened recently a couple of weeks ago... I was lethargic and getting more swelling in my legs especially with hot or warm weather... I spoke to my doctor and he said this is a common thing... He told me to stick to this medicine and try to cope with it.”</td>
<td>Case 603-IN-M-51</td>
</tr>
<tr>
<td>Reduce dose</td>
<td>“I also had a problem with the tab that has been reduced from 20 mg to 10 mg [Nicorandil]. I had dizziness so it was reduced by my consultant as well as my GP.”</td>
<td>Case 709-IN-M-66</td>
</tr>
<tr>
<td>Change from one medicine to another</td>
<td>“I spoke to my GP and he didn’t believe me, he said ‘Don’t worry every medicine has a side effect’, but I started to feel unwell. Then, I spoke to the consultant and I told him ‘Listen, if you will not change the Tegretol for me, I will stop taking it’. Then, the consultant spoke to the GP and told him to change the Tegretol to this one here [Keppra].”</td>
<td>Case 702-IN-M-57</td>
</tr>
<tr>
<td>Prescribe a medicine to treat the side effect of another</td>
<td>“I am honest with my doctor like this one (Diclofenac) I started using two years ago but I had vomiting and I felt unwell so I spoke to my doctor and I told him that I stopped taking it for a period of time so I was prescribed antiemetic drug [Metoclopramide].”</td>
<td>Case 305-AR-F-32</td>
</tr>
<tr>
<td>Change dosage form</td>
<td>“Methotrexate I take it on Saturday and when I take it, I feel sick, drowsy and nauseated... They said that they will change the dosage form of Methotrexate from tabs to injection.”</td>
<td>Case 204-AR-F-45</td>
</tr>
<tr>
<td>Stop taking medicine</td>
<td>“Because I had rash and I could not sleep from itching... I spoke to the rheumatologist and GP. They were suspicious that this is a SE of Humira® injection so they decided to stop it to see whether it is from Humira®.”</td>
<td>Case 204-AR-F-45</td>
</tr>
</tbody>
</table>

Some individuals reported that their doctors attributed their symptoms to imagination or age, dismissed the importance of their symptoms or said that a connection between the symptoms and the medicine was not possible. When reported side effects were belittled or dismissed by HCPs, some participants described how they accepted their doctor’s response, doubted their own
attrition and persisted with taking medicines rather than consulting a doctor a
again for the same problem because they balanced the unwelcome side effects
against the reasons to take medications. Some balanced the unwelcome side effects
against the positive experiences with a healthcare professional, which might involve
advice from a healthcare professional:

“I put my full trust in the doctor... If I am going to die in their hands, I
don’t mind [laughs].” [Case 708-IN-M-65]

“My doctor obviously would know better than me.” [Case 211-IN-M-59]

Other participants balanced the unwelcome effects with perceived benefits of
taking their medications. This might involve achieving a good outcome or feeling
better when taking medications or preventing any possible harm when not taking
medications:

“When I take Methotrexate I feel stressed and I have bad mood... I have
fears of side effects but I have to use my medicines, I have no other
option... They make me feel better” [Case 401-AR-F-40]

“I need to take my medicines as instructed to prevent any possible
harm.” [Case 604-AR-F-52]

In contrast, other respondents were sufficiently convinced of their own attributions
and they went to seek advice from other sources that were in a position to give a
recommendation or to change the prescription, such as other HCPs or pharmacists
who were not involved in the original prescription:

“When they gave me extra Insulin yesterday I was very upset and I came
to here to speak to him [pharmacist] and he made me feel better. He
told me it [Insulin] is necessary to control my sugar level... I only hope
that I won’t gain weight with taking Insulin.” [Case 309-AR-F-44]

One individual stated reporting side effect directly to the pharmaceutical company:
“I spoke to my GP and he didn’t believe me, he said ‘Don’t worry every medicine has a side effect’, but I started to feel unwell. Then, I spoke to the drug company that makes the Tegretol, and they said to me ‘Don’t listen to what GP says, stop the medicine and speak to your consultant’. Then, I spoke to the consultant and I told him ‘Listen, if you will not change the Tegretol for me, I will stop taking it’. Then, the consultant spoke to the GP and told him to change the Tegretol to this one here [Keppra] and he also prescribed this one [Omeprazole].” [Case 702-IN-M-58]

Another one revealed consulting a private doctor:

“I saw diabetes specialist three months ago... I heard a lot about him and my brother recommended me to see him... Well, I was thinking that he can prescribe something else other than Metformin because Metformin that I am using causes weight loss. So, I was expecting that he can change it to something else... No, he kept everything as it is and told me that I have to take it.” [Case 604-AR-F-52]

Another respondent skipped taking his medicine:

“Metformin... I take two tabs three times a day but sometimes I alter the dose, do you know why? Because if I take every day six tabs I feel tired and weakness in my legs... At night time I always take two tabs but in the morning and in the afternoon I sometimes take one tab rather than two tabs... I discussed that with him but I know what is better for me... Cholesterol tab gives me too much problem... When I swallow it I can’t breathe... My doctor knows about this but he couldn’t find anything... So I have to balance and adjust the dose myself... Sometimes I take and sometimes I don’t.” [Case 103-BNG-M-45]

In summary, the results of the current study indicated that concerns about unwanted effects of medication and how these weigh up against perceived benefits were of a major concern for participants from SA and ME backgrounds as well as in patients from all ethnic groups and across all chronic conditions (Carter and Taylor, 2005). In the present study, doctors responded to patients’ complaints about medication side effects in a variety of ways: by educating patients, changing medication, reducing dose of medicine, treating the side effect by prescribing another medicine, changing the dosage form of the drug, telling patients that the
benefits outweighed the harm, saying that there were no alternatives or that side effects were to be expected. When reported side effects were belittled or dismissed or not solved by HCPs, some participants continued to take their medicine as instructed but others took an active decision and decided to seek further advice or to take action themselves to solve the problem either by skipping doses, adjusting doses and regimen or stopping the medicine rather than consulting a doctor about the same issue again, especially when side effects continued to interfere with a body part or life routines. The most common scenarios in this study were that participants recirculated many times before establishing a stable pattern of medication use.

The problem is that many SA and ME patients in this study reported that they had not been told of commonly encountered side effects and what to do if a side effect is experienced, which made them more vulnerable to inappropriate medicine-taking behaviour. The decisions that were made without support and advice of doctors could affect medication effectiveness and safety. Thus, informing patients about possible side effects and what actions to take in order to counter side effects should be mentioned by HCPs when prescribing a new medicine. Asking whether patients experience any unwanted SE and whether they make any changes to their medication due to SE should be reviewed every six months. Patients should be offered advice tailored to an individual’s experience, not necessarily about changing medication but at least advice that makes patients feel that their experiences, worries or fears are taken into account (Benson and Britten, 2006).

5.2.2 Beliefs about severity of disease, control of its symptoms and perceptions of the need for medication

Many participants reported taking the medication in response to their symptoms, severity of disease, and perceptions of the need for medication. Patients were more likely to comply or sometimes overuse their medication if they perceived their illness to be severe or serious and thus they might be more susceptible to the complication of the disease if left untreated, and that the benefits of complying
with their medications (e.g., preventing complications, symptoms relief) outweighed the barriers or risks of taking it (e.g., complexity, side effects, interference with life routine). In contrast, patients were less likely to comply with their medication if they perceived their condition to be less severe or with absence of symptoms or fluctuation or if no signs of improvement in symptoms had been noticed, and subsequently the barriers or risks of taking medication (e.g., complexity, side effects, interference with life routine) outweighed the benefits of complying with their medications (e.g., control symptoms or prevent future complications).

Many participants used their medication intermittently to control their symptoms rather than using them continuously to control their symptoms. Some did not perceive their disease as a serious medical condition or a priority illness and consequently they reduced dose or dosing frequency or stopped medication for a while. For example, some patients disclosed under-using tablets when symptoms improved or they “felt better”:

“I have been using antidepressant medicine for almost 12 years since I came to the UK. Nowadays I am trying to decrease taking antidepressant medicine if I don’t need it... I fed up with all medicines; I don’t want to swallow more medicines especially if they are not necessary.” [Case 201-AR-F-62]

“Purple inhaler [Seretide] I use for asthma... two puffs at night... I don’t use it every night... Yes, almost every day... I don’t use inhalers, if I don’t have shortness of breath... Because they have side effects which I prefer to avoid.” [Case 313-AR-F-44]

“Yes, sometimes when I feel I am OK, I stop taking my medicines. Yes, all my medicines. Once or twice a month... If I feel I am OK, I stop taking them for three or four days. That’s why my wife is bugging me and nagging all the time to make sure that I take them [laughs].” [Case 216-AR-M-50]
Chapter 5 – Results (A description of the MRPs and contributory factors to the MRPs that may be similar to the general population from patients’ perspectives)

At the same time, some frequency and/or dose increments were made by participants based on their need for the therapy, which was guided by the existence or persistence or worsening of symptoms:

“Yes, sometimes when I feel unwell, I increase the antidepressant tabs Risperidone and Mirtazapine... Rather than taking one tab a day from each, I take two tabs a day from each... Once or twice a month... Last time I did it was a week ago.” [Case 215-AR-M-40]

Some participants acknowledged using medication as preventive approach to keep the symptoms away or from getting worse for a while (e.g., short acting beta 2 agonist):

“Ventolin I use it for asthma... I always carry it with me. I take 20 puffs [laughs]... I use it regularly just in case.” [Case 208-PAK-F-35]

Others did not perceive the importance of adhering to medications that are used for preventive purposes (e.g., lipid-regulating drugs to lower blood cholesterol level or proton pump inhibitor to prevent ulcers):

“Like my cholesterol tablet, when I feel I am all right, I stop taking it but then I feel unwell so I go back and take it as instructed.” [Case 303-AR-F-53]

“Lansoprazole they gave it to me because I had reflux problem in the past, now I don’t have reflux problems... I am OK, but I still take it because my doctor still prescribes it to me... I adjust the dose for the whole month. You can say for about a week and days... Last month, I stopped them for three days and then I carried on. I should not tell you these things [laughs].” [Case 609-OSA-M-80]

Feeling of denial towards their diagnosis of illness was described by a couple of participants. It seems plausible that denial of the disease can lead to denying prescribed treatment, resulting in patients’ non-compliance:

“I don’t have asthma. They are giving me asthma medication but I don’t take them because I don’t have asthma. I take them only when required because sometimes I have shortness of breath.” [Case 212-AR-M-80]
“I don’t think it [Isosorbide] is necessary but I do keep it for a couple of days to make myself relieved... Because Isosorbide I think they have given it to me by mistake. They thought I had angina and then they gave it to me and they won’t take it off... I don’t have angina.” [Case 609-OSA-M-80]

Perceptions of expertise with the illness and body awareness are another factor which emerged and might have interfered with patients’ adherence to their medications. Some participants reported that they were able to skip and alter doses of their medications because they became experts at their illness and became aware of their own bodies, which allowed them to sense what to do in certain situations based on their own feelings rather than the advice of a health professional. They reported that they can feel when they need to reduce or increase their doses of their medications as their own body would provide cues for action:

“Well, it depends if I have strong pain, I take three tablets a day [Hydroxychloroquine] but if I don’t have strong pain, I take one tablet a day... I just know; you kind of become an expert with time.” [Case 604-AR-F-52]

“I should take 40 units of Insulin in the morning and 40 units in the evening before food. But 40 units are too much for me so I take 30 units in the morning and 20 units at night. If I take 40 units I feel unwell... I adjust the dose often... with Insulin only... Because sometimes at night I don’t eat so I don’t need a high dose of Insulin... You know what works for you.” [Case 213-AR-F-60]

In relation to attitudes towards illness or its medications, there was evidence that participants exhibited several attitudes which may have implications for medication or treatment adherence. For example, some participants met the diagnosis of their illness with denial. This finding has been reported in qualitative studies (Hernandez et al., 1999; Lautenschlager and Smith., 2006) and may adversely impact patients’ adherence to their medications or treatment. While some were in denial, other participants faced the diagnosis of illness by downplaying the severity of the illness,
i.e., minimize the severity of their disease by not paying too much attention to it. This attitude has been reported to decrease adherence to medications (Hernandez et al., 1999).

Perceptions of body awareness, i.e., participants’ feeling that they were able to sense what was going on in their bodies as it would provide them with specific cues for action (e.g., feeling depressed, shortness of breath, stomach pain), were reported and resulted in participants taking actions based on these cues (e.g., increasing or decreasing their doses of medications). This finding has been reported in the literature and was found to influence patients’ adherence to their diabetes treatment regimens (Hernandez et al., 1999; Vermeire et al., 2003). It is worth noting here that non-adherence as a result of body awareness does not necessarily result from poor knowledge but rather from a desire to maintain control over the body and to observe how one’s own body would function without medications.

Findings of the current study also revealed other beliefs about medicines among participants such as the necessity of medications for the management of illness, ineffectiveness of medications for controlling symptoms, and harmfulness of medications and their potential for serious adverse effects. Healthcare providers need to elicit these beliefs and address them to ensure patients’ adherence to their prescribed medications. Patients who do not believe in the necessity of medications for managing their illness may not adhere to their medications, and may benefit from education and counselling from their healthcare providers to address this concern. Similarly, patients who believe that medications are harmful chemicals that can cause serious adverse effects may also benefit from reassurance and education by their healthcare providers. An explanation of the consequences of not taking the prescribed medications may also resolve these beliefs. However, it is important for this to be achieved in a subtle way to avoid raising patients’ anxiety.

Although some patients in this study were well informed about their illness and treatments, they actively resisted complying with their prescribed treatments due to attitudes they hold towards illness and beliefs about medicines. These beliefs
and attitudes did not always influence adherence negatively. For example, severity of illness and worsening or persistence of its symptoms, necessity of medications appeared to influence compliance positively whereas denial of illness, symptoms improvement, asymptomatic condition, God-centred locus of control, perceptions of expertise with illness and body awareness, fears of side effects and drug dependence influenced compliance negatively. This shows that patients are not passive recipients of medical advice. Rather, they sometimes process this advice and develop their own way of taking their medications based on their circumstances or what makes sense to them. Thus, healthcare providers should respect patients’ autonomy, and accept that increasing compliance with prescribed recommendations is not as important as meeting patients’ individual priorities and needs. Patients need assistance and help to make informed choices and decisions about treatment. For example, there is a need to distinguish clearly between situations where changing the timing or quantity of medicine doses may be beneficial or do little harm and the situation in which there is a high possibility of adverse clinical outcomes.

5.2.3 Cognitive, physical and sensory problems affecting the use of medicines

Participants described how often and why they forget to take their medicines. They also mentioned how they behave when they forget their medicines and what strategies they used to remind them to take their medicines. Reasons as to why participants forgot to take their medicines differed between participants. Some patients had no specific reason for why they forgot to take their medicines:

“I take them all out. Take this, take this, take this and then the phone rings, I walk off and when I am on the phone, I forget that I have not taken it.” [Case 208-PAK-F-35]

Some participants used their fears of the side effect as an excuse for why they forgot to take this particular medicine:

“Yes, often... Once or twice a week... Last time I did that was yesterday [laughs]... My wife puts them in front of me on the table when I eat my
breakfast and even though I pretend not to see them [laughs]... I don’t like taking them... They all have side effects.” [Case 216-AR-M-50]

Other participants described how they became absorbed in their daily activities at home or at work and forgot particular doses of medicines:

“Yes, sometimes. Say twice every six months... No, I just forget because obviously if I am rushing out to work, I put my pills in the box and if I forget to pick it up and put it in my hand bag, then I will miss the whole day.” [Case 608-IN-F-50]

A patient reported that he found it difficult sometimes to remember taking his medication because of caring for his disabled wife:

‘[laughs] afternoon, the lunch time tabs I do forget because I am running around, looking after my disable wife because I am her carer.’ [Case 613-IN-M-64]

Some respondents reported that reason for forgetfulness was the inconvenience of taking a medicine at a prescribed time. For example, those who were taking all their medications in the morning explained that they had trouble remembering to take the statins, because it was the only medicine that they had to take at night:

“One or twice a year... Mostly with Atorvastatin because this is the only medicine I take at night so I do forget.” [Case 605-IN-M-66]

“One or twice a year... With Simvastatin because I fall asleep and then I remember that I didn’t take it.” [Case 211-IN-M-59]

One participant reported that she was instructed to take Exenatide injection before meals, which was difficult for her to remember:

“Often [laughs]... Only Exenatide injection because I need to take it before food and when I forget, I am not allowed taking it after food... This is what the nurse told me... I have to wait to the next dose... I forget two or three times a month.” [Case 310-AR-F-43]
Chapter 5 – Results (A description of the MRPs and contributory factors to the MRPs that may be similar to the general population from patients’ perspectives)

Perception that medicine was unnecessary when symptoms were controlled or when the patient did not perceive or experience any benefit from taking it was illustrated by different participants in the following quotes:

“Sometimes it happens... I forget the Insulin... I take the dose in the kitchen as usual and I cook the food... heat it up and then I forget whether I take it or not... To be on the safe side I take half the unit... I can’t take the full dose again because I may have hypos... Sometimes I forget to carry my Insulin with me when I leave home... Insulin is essential... I worry about it... I also sometimes forget evening dose of Insulin because of sleepiness... Tabs I might forget but I don’t care; I go to sleep even if I forgotten, they are not that important... For the tablets, I wait until the next dose and I take the instructed dose only... I don't double the dose.” [Case 107-OSA-M-57]

“I forget sometimes the ones that do not help me a lot like Diclofenac and Calcium tabs but Prednisolone and Methotrexate I have never forgotten them. Calcium tabs sometimes I take and sometimes I forget but my doctors insist that I should take it for my bones.” [Case 204-AR-F-45]

A participant declared forgetting to take Aspirin sometimes because this tablet is produced in a dispersible form and until it solubilises in water he may forget to take it:

“Sometimes... Mainly Aspirin because I need to put it in water to first dissolve and I have to take the other medicines so while waiting for tab to dissolve I forget [laughs]... Once a month.” [Case 312-AR-M-50]

Some participants admitted that forgetting to take their medicines resulted from polypharmacy and the vast number of tablets they were on as well as their belief that the disease was uncontrollable:

“Sometimes... 4-5 times last month... With the disease I have and the plenty of medicines I take, I feel depressed and anxious so I forget.” [Case 209-AR-M-49]
Other participants revealed other reasons for forgetting such as stress, laziness, not having their medicines with them when travelling or being away from home. When forgetting a dose, participants tend to do the flowing: skip it and continue with their normal schedule, take the missing dose as soon as remembered, or double the next dose. Table 5-9 illustrates actions taken by participants when forgetting to take medicines.

Table 5-9: Quotes of actions taken by participants when forgetting to take medicines.

<table>
<thead>
<tr>
<th>Actions</th>
<th>Quotes</th>
<th>Patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doubling the dose</td>
<td>“Once I took overdose of either Amitriptyline or Naproxen... I can’t remember which one was it... What I remember is that I took two or three extra tabs... I had to much pain... I took my instructed dose first but the pain did not relieve so I thought that I forgot to take my tabs so I took extra dose... I felt like there are pins and needles in my mouth and like I was walking on the air... My mouth was dry and my tongue was heavy.”</td>
<td>[Case 311-AR-F-45]</td>
</tr>
<tr>
<td>Taking medicines as soon as they remember</td>
<td>“I might not take it in the morning but as soon as I see it, I take it. I don’t miss anything but I might not take it in the right time sometimes.”</td>
<td>[Case 208-PAK-F-35]</td>
</tr>
<tr>
<td>Missing the dose and waiting for the next dose</td>
<td>“Now, if I forget, I prefer not to take them and wait for the next day than to take extra doses.”</td>
<td>[Case 214-AR-M-45]</td>
</tr>
</tbody>
</table>

Participants had developed different strategies to remind them to take their medicines; however, these strategies were not always successful. Some participants positioned their medications in visible places or left them in a particular room or table:

“I put them in front of me or otherwise I forget.” [Case 604-AR-F-52]

“No, I just put my box in front of me on a table beside my bed.” [Case 214-AR-M-45]
Chapter 5 – Results (A description of the MRPs and contributory factors to the MRPs that may be similar to the general population from patients’ perspectives)

Others got another person to remind them or ask them whether they remembered to take their medicines, usually a family member, which was the most commonly used strategy and was perceived as successful and efficient:

“Yes, my wife does. She reminds me to take my medicines sometimes.” [Case 210-AR-M-55]

“My mother and sister remind me to take my medicines.” [Case 205-AR-F-57]

Some other participants used aids such as alarm clocks, dosette box, and calendars as a reminder aid:

“All my medicines I put in a box that says SAT, SUN, MON, and MORNING, AFTERNOON, EVENING so I take according to what I put in the box.” [Case 606-IN-M-81]

“Alert in my mobile and my family remind me as well because I forget a lot.” [Case 303-AR-F-53]

“I have got a little pad, I write down each day and I tick off them when I take my tabs… Twice a year [I forget].” [Case 710-IN-M-58]

“Can’t remember when the last time I forgot [laughs]… I don’t have a good memory… With all my medicines… No, I just write it down on a piece of paper but sometimes I forget to see the paper [laughs]… Also my mum and dad remind me to take my medicines… Nearly every day [laughs].” [Case 105-TRK-F-33]

The rest were taking their medicines at routine times such as eating meals, showering, or sleeping or waking up time to be able to remember to take their medicines:

“I have difficulties remembering to take regular warfarin and other medicines… What I do is I put all the medicines together and I take them before I go to sleep… Even if I do that I sometimes forget.” [Case 609-OSA-M-80]
Chapter 5 – Results (A description of the MRPs and contributory factors to the MRPs that may be similar to the general population from patients’ perspectives)

Other participants revealed altering or changing the time for taking their medications to suit their daily routine and to prevent them from forgetting to take their medicines. A participant reported taking a tablet and a half from Metoprolol all at once in the morning rather than taking half a tablet three times a day because she felt it would be easier for her to take Metoprolol with her other morning BP tablets Bendroflumethiazide and Ramipril. Other participants stated that they altered the time of taking their tablets to the morning, with other medicines, rather than the evening so that it was easier for them to remember:

“Simvastatin I take it in the morning. I take all my medicines in the morning because I forget if I leave it till night.” [Case 604-AR-F-52]

“I don’t do that but what I do is that I take my Adcal two tablets in the morning rather than one tablet in the morning and one at night because in this way I will be able to remember it better. If I take both tablets in the morning, I won’t forget.” [Case 503-IRN-F-63]

Other than forgetting to take medicines, there were barriers that may have prevented participants from taking their medications such as difficulties reading labels or leaflet because of the small font size on type. Other obstacles included difficulties swallowing big tablets and problems with hearing instructions or opening containers and blister packs, mainly because of arthritis pain. In all cases, patients described how they overcome these problems such as using hearing aids, reading glasses, and help from family members. Patients did not report these problems as reasons for missing doses.

In summary, forgetting was the most frequently quoted reason for unintentional non-compliance by participants. It often resulted from distractions (e.g., busy life style, being a carer), fears of side effects, inconvenient time of taking a medicine, being away from the home/travelling, having too many medicines, misperceptions such as not perceiving the importance of adhering to medications when symptoms are controlled or when they are used for preventive purposes or symptomless conditions or when patients do not benefit from taking them, etc. Patients
developed different strategies to improve medication taking in which getting a family member to remind them to take their medicines was the most commonly used strategy. These strategies were perceived as sometimes successful and efficient in promoting medicine-taking behaviour.

5.2.4 Problems with repeat prescriptions

In the interviews, various issues with prescribing and issuing repeat prescriptions were exposed, in which 31 participants were identified with 34 repeat prescribing problems. These problems could have been caused by the GP surgery, pharmacy staff or participants. Most participants’ complimented the repeat prescribing process for the ability it provided to renew a prescription without face-to-face consultation with the GP or nurse. However, while this reduces the workload for the GP and is convenient for the patient, it does not provide the adequate control that is needed to ensure that every repeat prescription is still appropriate, effective and well tolerated, and that it is still being viewed and taken by the patient as intended. Infrequent therapy reviews may lead to failure to prevent, identify and solve medicine-related problems and medicine wastage, and may, thereby, have a negative impact on the effectiveness, safety or cost of the medications prescribed.

The repeat prescribing process was criticised by some participants in this study. Different negative views and experiences were revealed; one of the problems was old medicines remain on the repeat prescription form, which made it difficult for some participants to identify their current medicines on their repeat forms and gave them the opportunity to order medicines that they were not currently prescribed, either to be used by themselves or by someone else. During one interview, the participant stated that it was difficult to identify medicines that he was taking currently on his repeat form because old medicines had not been deleted from the form and thus this caused confusions and complications for him [Case 606-IN-M-81]. It was identified that his wife had the opportunity to order and take Senna, which was no longer used by her husband because Senna had not been deleted from his form.
Chapter 5 – Results (A description of the MRPs and contributory factors to the MRPs that may be similar to the general population from patients’ perspectives)

Although guidance on repeat prescribing issued by NHS Executive in 1997 advises that ‘no more than 6 repeat prescriptions should be made, or 6 months should be elapse, whichever is less, without reassessing the patient’s needs’ (NHS Executive HQ, 1997), a number of participants perceived the repeat prescribing process not to provide adequate control that is needed to ensure that every repeat prescription was still appropriate, effective, well tolerated and taken by the patient as intended:

“Isosorbide I think they have given it to me by mistake. They thought I had angina and then they gave it to me and I do not know why they don’t take it off... But I still take it because my doctor still prescribes it to me... I adjust the dose for the whole month. You can say for about a week and days... Last month, I stopped them for three days and then I carried on. I should not tell you these things [laughs].” [Case 609-OSA-M-80]

“Salbutamol inhaler, I don’t need it but it is on my prescription... I collect it but I don’t use it.” [Case 502-AR-F-65]

Thirty-one participants revealed that they had delayed taking their prescriptions to a pharmacy at least once after running out of supplies of medicines. Their reports varied from just once or twice ever to a number of occasions. Of the 66 participants with complete records available in the pharmacy, 51 (77%) participants’ responses agreed with pharmacy records and 16 (23%) participants’ responses did not agree with pharmacy records. A delay in issuing repeat prescriptions in the GP surgery was one of the reasons for the delay in taking prescriptions to the pharmacy after patients’ supply of medicines ran out. A patient specified that lack of integration between primary and secondary care together with a lack of communication between the various clinicians regarding medications that have been altered were the causes for such delay:

“If I ask receptionists for something [medicine] in particular, even if I ticked it, they won’t give it to me... The hospital changes the doses and they may not know about it in time... So, I have to go and tell them that this is what the hospital done and then they will say okay we will issue it for you.” [Case 505-PAK-M-57]
Others demonstrated that the reason for slow issuing of repeat prescription was the time the GP surgery takes to generate prescriptions. It is well known that a repeat prescription should be ready to collect after two working days of requesting it but some prescriptions took longer to issue either because the doctor did not sign and pass them to the receptionist or because the receptionist claimed that the patients did not tick which medicine they wanted in their prescription as in the following quotes:

“Yes, I usually have to borrow medicines before getting my repeat prescription... Mostly because the GPs have not passed it on or have not made the prescription ready, something like that... I was just trying to persuade him [pharmacist] to request my prescription from my GP so I don’t have to request it and deal with them every time.” [Case 503-IRN-F-63]

“You see these medicines in my repeat prescription, I have been running out of them for three days because when I went to the GP, they told me to leave the prescription and come after two days to collect it. After two days they told me that I did not tick which medicines I needed but this was not true I ticked all of them. Then, they told me to come after two days to collect my prescription...Why I have to come after two days? I have been waiting long enough... Today was the last day I have tablets; if I did not get my prescription today, I would not be able to take my medicines because of their fault.” [Case 402-AR-M-65]

A further reason for delay in taking prescriptions to the pharmacy after patients’ supply of medicines ran out was because of forgetfulness. It was identified that the majority of participants who delayed taking prescriptions to the pharmacy did not take remember to take their medicines as instructed (18/31, 58%). It is likely therefore that patients who forget to take their medicines may also forget to take their prescription to the pharmacy after running out of medicines. It was even identified that 11 participants out of 31 (36%) delayed taking prescriptions to the pharmacy after their supply ran out, despite receiving help from their family members in ordering and collecting their prescription from the GP surgery and their medicines from pharmacy. This was possibly because the help was not regular.
Patients who did not have a problem with delay in taking prescriptions to the pharmacy were those who asked the pharmacy to collect and order their prescription from the GP surgery and to remind patients to come and collect their medicines from the pharmacy on a regular basis before running out. Two participants [Case 605-IN-M-66] and [Case 503-IRN-F-63] wished that their pharmacy would establish a service where it could order and collect prescriptions from the GP surgery every month so that the medicines would be ready for dispensing without the need for the patient to go to the GP surgery.

Another negative experiences regarding the repeat prescribing process was prescription length that was not tailored to the needs of the individual participant. For example, when asked about frequencies with which participants obtained their repeat prescriptions from GP surgeries, twenty patients reported obtaining them every month. Twenty-eight-day prescribing can adversely affect patient adherence with long-term therapies because patients anticipate running out of some medication before the end of the month. The following quotes showing problems with the 28-day repeat prescription:

“No... Couple of times... three times last year... I forgot to order some of the medicines and I ran out so I had to come to the pharmacist and ask him to give these medicines... It happened because some medicines like Statin and Metformin has 28 tabs in the box not 30 so for two days you don’t have tabs... That’s why I missed it out.” [Case 709-IN-M-66]

“Yes, sometimes I forget... But when I remember, I tell the pharmacy and the pharmacy gets it for me straight away. Because there are only 28 tabs in the box and as you know each month has 30 or 31 days so I get less tablets.” [Case 703-IN-M-60]

In summary, problems with repeat prescriptions and drug-prescribing may affect the safe use of medicines and medication adherence if not being addressed. These problems have shown that a review of patients’ records by pharmacists may be beneficial to patients. Providing services such as ordering medicines from GP
surgery and delivering medicines to patients’ homes by pharmacy staff may also help the patients.

5.2.5 Problems attributed to access to, and organisation of, services

Thirty-two participants were identified with 66 GP surgery and pharmacy service problems. Patients’ perceptions of and views towards their GP surgeries were highly negative. Many patients were unable to make appointments with their GP with the waiting times being too long and the consultation times being too short. Others were unable to see the same GP.

**Difficulty getting appointments**

The NHS plan states that patients should be able to access a HCP within 24 hours and a general practitioner within two working days. However, one of the most commonly reported problems was the difficulty getting an appointment to see a GP. Participants in the present study revealed that the booked appointment system was ineffective and inefficient because they were unable to see their GP in emergencies or they experienced barriers making regular appointments. Typical comments were:

“It takes time sometimes to get an appointment for my GP. For example, once I fell down on my hand and all this part was blue, when they gave me an appointment, this part was back to normal... Sometimes I have to wait for two weeks possibly to see a doctor.” [Case 201-AR-F-62]

“I try to make appointments for my parent later in the evening but it is a hard job. I get the attitude of call at 3pm to say ‘Can I please make an appointment, the latest one in the evening’ and if I forget to call at 3 pm and I ring them up later, the appointments are gone. So I found out that was difficult and I can’t make appointments.” [Case 608-IN-F-50]

Dialling the telephone number of the GP surgery over and over again without getting through and the short length of time given for patients to book a normal appointment were the biggest complaints reported by participants about the booked appointment system. As a solution, most participants preferred to use the
emergency appointment over booked appointment as it offers the patients the opportunity to see their GP or other HCP quicker and when required even if they were not experiencing a medical emergency and their problems did not count as an urgent appointment:

“Yes... All the time [laughs]... Cos in my GP surgery if you want to make an appointment, you should wait two weeks to get an appointment... So, sometimes if you can’t wait two weeks, you have to call them and say ‘I need an emergency appointment.’” [Case 208-PAK-F-35]

“Well, appointment time is a bit of a headache. You can’t get appointment. They tell you to call in the morning and you can’t get through. But I found a way. If you go there personally at 8am and then talk to them as say I want emergency appointment, you will have a chance to get one. But through the phone it is difficult. It is engaged, engaged, engaged because everybody is phoning and after 8:30 they won’t give you any appointment because the ½ hr window to book appointment has gone.” [Case 605-IN-M-66]

Apart from difficulty getting though on the phone, the attitude of receptionists was also highlighted by some participants as a barrier for booking not only regular appointments but also urgent ones. They had to battle with receptionists and had to answer many questions in order to get an appointment:

“Appointment time is a problem... You can’t get appointment when you need... and you can’t go to A&E unless it is something so serious... and to get emergency appointment you need to be asked lots of questions by receptionists, which is annoying.” [Case 101-BNG-M-48]

“The only problem I have is the appointment time... Sometimes they said ‘We are full all this week’ so I have to argue and fight with receptionists and I have to answer all their questions to get emergency appointment.” [Case 306-AR-M-47]
Chapter 5 – Results (A description of the MRPs and contributory factors to the MRPs that may be similar to the general population from patients’ perspectives)

Long waiting time in GP

Besides difficulty getting appointments, long waiting times during visits was reported by many participants as a problem when accessing healthcare services, as outlined in the following quotes:

“If your appointment is at 5pm, sometimes the doctor sees you at 6pm.” [Case 210-AR-M-55]

“I am just not happy about the long waiting time inside the GP surgery and the difficulties for getting your appointment... Like my appointment today was 10.30 am but I was not seen until 11.15 am.” [Case 503-IRN-F-63]

The continuity of care issues

Many patients in the present study wanted both quick access to and relationship continuity in practice. This was evident by the number of participants who preferred to consult only one doctor in this study (70/79, 89%). Not being able to see or consult one known and trusted doctor regularly was also seen as an obstacle for some SA and ME patients in having their medicine and healthcare needs met:

“I can’t see my regular doctor always, which I don’t like.” [Case 313-AR-F-44]

“I don’t see my regular doctor every time; I have to repeat the same story to a new doctor, which annoys me.” [Case 401-AR-F-40]

“My regular GP gives me enough time because he knows that I am depressed and I need time to express myself but if someone else replaces him during his holiday, he/she won’t give me enough time, which I don’t like.” [Case 204-AR-F-45]

The reasons for not being able to consult their known regular doctors all the time were either because of unavailability or popularity of their GPs which made the majority of patients book appointments with them:
Chapter 5 – Results (A description of the MRPs and contributory factors to the MRPs that may be similar to the general population from patients’ perspectives)

“We go to this particular doctor but we sometimes find it difficult to get an appointment with this doctor... He is very popular and it takes more than necessary sometimes to get appointment with him, possibly 10 days.” [Case 613-IN-M-64]

“My GP is an excellent person; everyone wants to see her... So when I call the receptionist, she tells me that my doctor is fully booked.” [Case 310-AR-F-43]

A further reason in difficulties establishing continuity of care was lack of regular doctors in the surgery:

“I’ve never seen the same GP, they are all locums, they keep changing... So, yes it is a constant battle... They just need to employ one permanent doctor but they don’t [laughs].” [Case 208-PAK-F-35]

“Yes, in my GP the doctors are always changing... Yes, I want to see one doctor only.” [Case 201-AR-F-62]

It was identified that patients, who consulted more than one doctor were more likely not to take their medication as recommended (7/9, 78%). The findings also showed that discontinuity of care is associated with lack of information on medicines. Five patients out of nine (56%) who consulted more than one doctor were identified with lack of information. In addition, seven patients who consulted more than one doctor had been admitted to hospital at least once in the last five years and five patients had been admitted to A&E at least once in the last five years. Discontinuity of care also increased the chance of ADRs and DIs. Six patients out of nine (67%) who consulted more than one doctor were identified with ADRs and DIs. However, a clear conclusion cannot be drawn from a small number of participants. One participant reported that discontinuity of care could have caused an adverse outcome, as illustrated in the following quote:

“One day my doctor [a name of a doctor] was a broad and I was coughing... The doctor who replaced her was very bad... I told him ‘I am coughing’. The screen in front of him should show him what I have, what medicines I take and everything. He gave me syrup for my cough...
Chapter 5 – Results (A description of the MRPs and contributory factors to the MRPs that may be similar to the general population from patients’ perspectives)

When I went back home as usual I read package leaflet insert and it was written ‘DO NOT TAKE THIS MEDICINE IF YOU ARE TAKING ATENOLOL OR METFORMIN’ and as I told you these were the medicines that I was taking. So, what I did was that I didn’t take the syrup... When my regular GP came back from her holiday after two months, I took an appointment to see her for something... She opened the computer and she shouted ‘Oh, my God!! What did you do with this medicine?’... I told her ‘Don’t worry, I did not take it’. She said ‘What the hell... you could’ve died, if you took this medicine... It could have stopped your heart immediately.” [Case 301-AR-F-54]

In the last few years, particularly since the drive for rapid access and the large proactive GP workload encouraged by the Quality and Outcomes Framework (QoF), patients are finding it far too difficult to get as much relationship continuity as they would like (Campbell et al., 2009). Research evidence shows that continuity of care is associated with better understanding of health condition and treatment, medicine usage and adherence, uptake of immunisation and screening programmes, and with cost saving in prescribing, hospital admissions and referrals and use of A&E and overall cost of healthcare (Alison and Freeman, 2011). It is also associated with increased trust, security in doctor-patient relationship, and reduces unnecessary and harmful medical intervention (Alison and Freeman, 2011). Researchers have shown that positive patient enablement (feeling able to cope with their condition after a consultation) is closely linked to relationship continuity (Alison and Freeman, 2011). In contrast, patients who experience discontinuity of care are more likely to discontinue treatment by not turning up for appointments or by not taking their medication as recommended (Alison and Freeman, 2011). Discontinuity of care may also increase the chance of ADRs and misuse of prescription medication by patients.

Research has shown that patients most likely to benefit from seeing the same doctor are vulnerable in other ways (e.g., older, disabled, chronically ill, language problems and poor education). Therefore, the most deserving patient may find it difficult to get the continuity they want if success needs a forceful personality combined with excellent negotiating and communication skills (Alison and Freeman,
Chapter 5 – Results (A description of the MRPs and contributory factors to the MRPs that may be similar to the general population from patients’ perspectives) 2011), which SA and ME in the present study may not have. In a recent review, results in two contrasting areas of England 2008-2009 demonstrated that, while overall the frequency of consulting a preferred doctor seemed good, there were geographical variations and difficulties related to age and to ethnic group (Freeman and Hughes, 2010).

Mead et al. (2009) investigated why some ethnic minorities evaluate medical care more negatively and revealed that these patients reported the worst experiences of waiting times for an appointment and “continuity of care”, in comparison to other patient groups. The lack of organisation in the healthcare system, including doctors’ attitude towards patients, inability to make appointments on day of request and the inability of patients to express all their problems in a single consultation, reduce the level of continuous care given to patients with chronic diseases (Cowie et al., 2009). Prentice and Pizer found that long waiting times are associated with poorer health outcomes, with mortality rate being the worst-case scenarios (Prentice and Pizer, 2007).

In general, SA and ME patients have many expectations and needs from HCPs and healthcare services and negative perceptions may arise when these are not met. Thus, pharmacists and HCPs need to work together to reduce health and access inequalities experienced by SA and ME populations by encouraging and supporting continuity of care, listening to what patients say they want most, involving patients in plans for service changes, giving patients clear information on how to get an appointment with their preferred doctor, reviewing the process for booking appointment, promoting teamwork, internal communications and staff training, reviewing staff capacity and employment policies, looking for where things go wrong by using critical event reviews to share learning, and adjust policies and practice (Alison and Freeman, 2011). The provision of appropriate healthcare facilities is crucial to enable patients’ access to healthcare services at all levels.
5.2.6 Miscellaneous

Participants identified with intentional non-compliance were more likely to be younger (Mann-Whitney test, \(P=0.004\)). There were (35/60, 58\%) participants aged 65 or less than 65 who were identified with 65 intentional non-compliance problems. In contrast, there were (8/20, 40\%) participants aged above 65 who were identified with 19 intentional non-compliance problems. The data also showed that there was a statistically significant difference between SA and ME participants in terms of age (t-test, \(P=0.000\)). The mean age of SA participants was 62.80 (range 51-81 years) whereas ME individuals’ mean age was 52.58 (range 18-83 years).

It was noticed in this study that not all patients want to share in making the decisions. For example, some elderly patients or those who are very ill tend to be more likely to want the doctor to decide and tend to be more compliant, possibly because they might have more concerns and worries about their health and treatment than younger patients. Other people, however, want to participate in all decisions about their care and expect their doctor to provide them with the necessary information to enable them to do so, such as people who are relatively young and healthy and in cases where the doctor did not involve them in the decision-making process, these patients may make an informed decision not to take medication as directed.

Besides age, the level of education was more likely to affect patients’ compliance. Participants identified with intentional non-compliance were more likely to have a lower educational level (i.e., up to high school or up to 10\(^{th}\) grade) (chi-square, \(P=0.043\)). The majority of participants for whom 66 intentional non-compliance were identified reported having a lower educational level (n=33/53, 62\%). There were (10/27, 37\%) participants who had a higher educational level (i.e., university or above) and were identified with 18 intentional non-compliance problems. Patients with a lower educational level (i.e., up to high school or up to 10\(^{th}\) grade) (chi-square, \(P=0.021\)) were also more likely to be identified with GP and pharmacy service problems (chi-square, \(P=0.021\)). Participants (26/53, 49\%) who had a lower
educational level were identified with 56 GP and pharmacy service problems whereas participants (6/27, 22%), who had a higher educational level were identified with 10 GP and pharmacy service problems. Poor education was more likely to affect health literacy, communication with HCPs, participation in decision-making, compliance and access to healthcare for some participants in this study:

“Actually my daughter is the person who orders, collects and brings me my medicines so she is the one that knows about my medicines... I don’t remember 75% of my medicines... I don’t know their names or when to take them or how many should I take because my daughter always prepares my medicines for me and helps me with administration... She knows better... She does everything for me... She takes me to the doctor and she tells me what he says... Yes, often [adjust the dose of her medicines]... Of course I do but my doctor does not know.” [Case 201-AR-F-62]

“My mother [Case 607-IN-F-75] complies very badly... She does it all the time with all her medicines... I tell her the information the doctor told me but she can’t understand the information given to her, she gets confused... She is illiterate and she can’t speak or read English... She relies on my father and myself in everything and if I am busy with my father because he had heart attack or whatever, then she gets left behind.” [Case 608-IN-F-60]

“I don’t know their names [his medicines]... My doctor told me what each medicine is used for and I wrote on each box in Arabic what it is used for... My son helps me with everything, he is taking good care of me because he is educated and he knows better than me... He reminds me to take my medicines, he brings them to me... He gives me advice and information on my medicines... He comes with me to the GP because he speaks English and I don’t.” [Case 209-AR-M-49]

**Key messages from Chapter 5**

- Ninety-one per cent of SA and ME participants were identified with at least one MRP. This could support prioritising medication use review to SA and ME groups.
- All the MRPs may affect the safe use of medicines and medication adherence if they are not being addressed.
• All the MRPs could be detected and prevented in the community by communicating with the patients, providing expanded services and reviewing patients’ records in the pharmacy.
• Many problems that were identified in SA and ME groups were similar to the general population.
• Concerns about unwanted side effects of medication and how these weigh up against perceived benefits; perceptions of severity of disease and control of its symptoms; cognitive, physical and sensory problems; difficulties related to access to care (e.g., appointment time, waiting time, length of consultation, continuity of care) were all reported factors that may contribute to the problems and may be similar to the general population.
• There was inconsistency between what was identified by the researcher and what was reported by the patients when patients were asked to self-report their intentional non-compliance. Conversely, what was identified by the researcher and what was reported by the patients were similar when they were asked to self-report their unintentional non-compliance. This might mean that patients did not perceive themselves as non-compliant individuals; rather they viewed themselves as being empowered people to manage their own health and medicines and decide what the best is for them. Thus, strategies for informing and empowering patients in treatment decision-making should be high on the policy agenda.
• It seems to be that there is a need to implement changes at the primary care level, with the aim of improving the equity of access to primary care services for South Asian and Middle Eastern patients in regard to appointment systems and making regular appointments, continuity of care, short length of consultations and long waiting times.
Chapter 6  Contributory factors to MRPs that may be specific to SA and ME cultures

Introduction

This chapter describes the reasons which may contribute to MRPs and were reported to be specific to SA and ME cultures, along with direct quotes from participants’ interviews.

6.1 Religious practices and beliefs

Ramadan is the holiest month in the Islamic calendar and Muslims abstain from eating, drinking and smoking from dawn to sunset. Annual Ramadan fasting is a fundamental religious right in Islam observed by adult Muslims. Ramadan fasting may mean changes in use of medicines among people of Muslim background. Some Muslim patients in the present study, who were able to fast in Ramadan, adjusted and made some alterations to suit their fasting. The alterations made included modifying the number of doses, time of doses and the time span between doses, and even the total daily dose. Some of these actions were taken without consulting a doctor and without seeking medical advice because patients thought that this would be temporarily (i.e., for one month) and thus there was no need to ask. They also reported that their doctors did not talk with them about fasting and medicine taking unless they asked.

Ramadan tended to be an important factor which influenced adherence to medications among study participants but obviously different patients would describe their medication-taking behaviours in Ramadan in different ways. Most Muslim patients who were taking a single daily dose (e.g., evening dose) continued to take their evening dose after sunset (Iftar) whereas others who were taking their single dose in the morning, advanced this morning dose to before dawn (Sehri). However, a small number of participants revealed delaying the intake of the morning or afternoon dose to the evening. Many patients who were taking two
daily doses took the first one at the break of fasting and the second one before the beginning of fasting, in which case the dosing time and the time span between the doses are both altered:

“I have no problem in Ramadan because the morning tablet I take at Sehri time and the evening tablet I take at Iftari time. At the moment I have no tablets that I take in afternoon so I have no problem.” [Case 504-PAK-M-81]

“I take my tablets with the Sehri and the Iftari time so it is possible to fast.” [Case 308-AR-F-55]

Some patients who were prescribed more than two doses took the first dose in the early morning before fasting (Sehri time), and the second dose at dusk after breaking their fast (Iftari time) and the third dose was essentially ‘skipped’. A number of participants also reported that they were not adequately counselled by a HCP on how to adjust their medicines in Ramadan. Thus while fasting they changed their medicine use in different ways without necessarily discussing these changes with a HCP:

“Well, in Ramadan, when I fast I don’t take all the doses as instructed. So, by the end of the month I have extra tabs. Because for example this year I fasted from 3.00 am to 9.00 pm so I had only six hrs to take my medicines. All the medicines I take I need to take them after food and in Ramadan I eat only twice in Sehri and Iftari time. But some medicines like Metformin I need to take it three times a day... So, in Ramadan I take only two tabs, one in Sehri and one in Iftari time unless I eat a heavy meal in Iftari time, then I take two tabs after food rather than one. I am not sure whether this is right or wrong. Nobody told me what to do in Ramadan!... No, I did not ask because it is only one month.” [Case 205-AR-F-57]

“Because I have sugar the doctor gave me some tablets. In Ramadan, I take them [medicines] as instructed except Metformin which I miss only one dose so rather than taking one tablet three times a day, I take it one tablet twice a day. Well, I did not ask and no one bothered to tell me about it.” [Case 310-AR-F-43]
Talking to people about Ramadan and what they do enabled us to gain an insight into what people thought in terms of if there were other issues that influenced their medication-taking behaviours. Some people, for example, seem to believe that, whatever action they take to improve their health, it is going to be limited because they believe that are external factors that are important, one of which is ‘God’. Those who felt that their fate in terms of their health was dependent on God, described a tendency to leave everything up to God’s will, which might have a negative impact on their medication-taking behaviours, as illustrated in the following quotes:

“In Ramadan I don’t take my medicines at all... I don’t care really about medicines... It is my faith... Everything is up to Allah... I even sometimes can’t wake up because I go hungry in Ramadan but I will not let it go because of this... no way... Yes, if I die with it... I don’t mind... Although Rasoul Allah [the prophet Muhammad] said look after your body but I don’t... I ...., I ..., I love my Prophet [cries]... No, my GP does not know.”
[Case 501-PAK-M-68]

“Yes, I do make some changes in Ramadan... You know God is our saviour and protector... I have faith in God; he is to decide what’s going to happen to me, whether good or bad, not my medicines... life and death is something that only God can control. Sometimes you see someone dying despite being completely healthy, and sometimes you see someone living despite being very ill... No one can tell what’s going to happen to you other than God; whatever he wants, will happen.”
[Case 206-AR-M-66]

The alterations in medication-taking behaviours in Ramadan could change the efficacy and tolerance of many medicines since the toxicity and efficacy of many medicines may alter depending on the time of administration and this should be taken into consideration as an important factor influencing a drug effect or side effect or its pharmacokinetics. The National Institute for Health and Clinical Excellence (NICE) guidelines emphasise the importance of individualizing care on the basis of patients’ social, cultural and religious needs (Hui et al., 2010). Thus, HCPs should take patients’ views, concerns and preference into consideration in
order to prevent any changes being made. The inclusion of patient perspectives on medicine use during Ramadan is an example of counselling conducted on the basis of concordance and adherence. If required, HCPs should make appropriate changes in their patient’s dosage regimen according to the prescription components such as the schedule of administration, the route of administration, and interaction with food intake. If changes are not required, HCPs need to carry out some proper pre-Ramadan month education and counselling in order to teach patients about how they can manage their medication regimen effectively in Ramadan. The provision of information packs that include advice on Ramadan fasting is also recommended and this can be made available at diagnosis and also at annual review (Hui et al., 2010). HCPs should help patients to make their own decisions and to obtain optimal benefits from their medicines.

6.2 Travelling abroad/ being away from home

*The potential for altered medication-taking behaviours*

Families from ethnic minority groups often travel abroad, usually back to their homeland to visit their relatives. A number of participants were asked about how they managed their regimen when they travelled abroad and during holiday periods. Some made no adjustments to their medication and they took enough supplies with them to cover the duration of the stay by informing their doctor prior to their journey:

“Whenever I travel I take with me two months’ supply because I don’t stay longer than two months.” [Case 705-IN-M-64]

“I get to the doctor to give me another month’s supply so I usually take two months’ supplies with me.” [Case 710-IN-M-58]

Other patients stayed longer than they meant to and did not have enough supply to cover the entire period and thus had to go back as soon as possible to ask for further supply:
“Yes, sometimes I stay more than I meant to and I don’t take enough medicines with me so I try to go back home as soon as possible.” [Case 506-PAK-F-78]

“Yes, once last year... I was on holiday and I’d been away for five weeks and I came back and I have not realised that I would not have enough supply when I go back and I was short of three pills and I went to doctor and explained, I said ‘Please don’t let me wait for three days’ and they gave it to me straight away.” [Case 706-IN-F-62]

Other participants only took their remaining number of tablets, irrespective of the length of the time they were going away for, and they relied on the healthcare provisions of that country. This could raise a concern that participants could end up receiving dual therapy from a healthcare professional in the UK as well as following the regimen of a practitioner abroad, resulting in potential adverse drug reactions, especially given that HCPs in the UK have no or little knowledge of the level of care and quality of provisions available in South Asian and Middle Eastern countries:

“I just take whatever tablets I have left... I just take the same box to the doctor there and he [doctor] gives me the same medicine.” [Case 210-AR-M-55]

“No, actually last holiday I went to India, so I brought a lot of medicines with me... When I run out I take from these medicines.” [Case 704-IN-F-30]

The issue of travelling or being away from home was not only limited to running out of medicine or receiving dual therapy, it also involved changing the way patients’ took their medications either because they forgot their medication before travelling or because they deliberately decided to stop their medications in such situations and resumed their intake once they got back home where their normal routine was resumed. Some ethnic groups, for example, travel to take religious journeys, such as Muslims who undertake Hajj or Umrah in the holy city of Mecca in Saudi Arabia. For Muslims, the Hajj is the fifth and final pillar of Islam. It occurs in the month of Dhul Hijjah, which is the twelfth month of the Islamic lunar calendar. It is the journey
that every sane adult Muslim must undertake at least once in their lives if they can afford it and are physically able. Umrah is a pilgrimage to Mecca, performed by Muslims, which can be undertaken at any time of the year. Travelling to Mecca and being busy with performing religious duties and finding spiritual alternatives may mean changes in use of medicines among people of Muslim background. Zamzam water, for example, has a significant value for Muslims who believe it will relieve sickness. Zamzam water is located inside the Holy Mosque at about 20 meters east of the Ka’ba in Mecca. One participant stated that when he goes for Hajj or Umrah to Mecca, he does not take any medicines with him because he believed that drinking of Zamzam water will control his disease and relief his symptoms without the need to take any medicine:

“Well, I don’t go for holiday... the only place I go to is Saudi Arabia... When I go there, I don’t take any... Well, I rely on Zamzam water... because I read about it so much... No, I just don’t check my BP... I don’t check my diabetes... I don’t take any medicines... I eat what I like because this is my faith... If I feel bad, I drink plenty of Zamzam water... You met different Pakistani, right? [Laughs]... There are millions like me... Yes but I don’t tell the doctor, I tell nobody, only you.” [Case 501-PAK-M-68]

The potential for conflicting advice

The issue of travelling abroad also included receiving inappropriate advice or information from a HCP abroad that contradicted the advice the patient received from a HCP in the UK, which affected the way patients took their medicines:

“My consultant abroad told me it would be better if I stop Metformin... You are a healthcare professional and you should know that taking too many medicines may kill you... These are chemicals... I feel really scared... My GP in the UK at the beginning gave me 500 mg of Metformin but after the heart operation I had, he increased the dose to 850 mg twice a day and when I asked him to decrease the dose to 500 mg, he refused and said ‘I can’t until your blood sugar goes down’... I should take one tab in the morning and one tab in the evening but to be honest after what I heard I am now taking one tab only... My doctor doesn’t know about this.” [Case 210-AR-M-55]
Chapter 6 – Results (Contributory factors to MRPs that may be specific to SA and ME cultures)

He added:

“I should take one tab a day [Atorvastatin]... 40 mg a day... But I take half a tablet a day... You write 40 mg a day, I don’t want problems with my GP... The consultant told me that this cholesterol dose is too high and you don’t need such a high dose... It may affect your liver and kidneys... When I was prescribed this medicine, I didn’t use it at all but for the last three years, I have been using half tab a day because there was an Iraqi doctor here in the UK, he told me ‘It is wrong to stop taking your cholesterol tabs.’” [Case 210-AR-M-55]

In general, many medicines are readily available without a prescription in SA and ME home lands. Certain medications, such as laxative, Aspirin and antibiotic and others are commonly brought from patients’ home lands, kept on hand in homes and used by patients in the UK. This may lead to medication misuse, duplication of therapy and potential adverse drug reactions. A few participants (n=13/79, 17%) also reported travelling or being away from home as a reason for non-compliance. Thus, healthcare providers should ask patients about medicine-taking and obtaining practices during travel period, etc., and about other possible factors that may influence compliance and patients’ safety. For example, people with chronic diseases (e.g., diabetes) who are going for Hajj should have enough time to discuss it with a HCP and to consider a management plan for their illness. Pre-Hajj education seminars should be conducted. Travellers should take sufficient supply of their usual medicines and also carry a written record, giving the generic names, in case further supplies are needed.

6.3 The extent of family support/help with medicines reported by participants

Almost half (39/80) of the interview participants revealed that they received help with medicines and 41 (51%) revealed that they did not receive help. Of the 39 participants who received help, six (15%) lived alone and 33 (85%) lived with at least one family member. Of the 41 who did not receive help, seven (17%) lived alone and 35 (83%) lived with at least one family member. The help with medicines was mainly from a family member (n=23), a pharmacy (n=10), or from a family member
and a pharmacy (n=6). None of the participants in this study received help from a formal carer or a friend. Twenty-seven (69%) received regular (i.e., daily, weekly, fortnight or monthly) help with medicines and 12 (31%) received help only when required.

The extent of support reported by participants was different, ranging from undertaking one activity to being responsible for all aspects of medicine management. Assistance with ordering or collecting a patient’s prescription from the surgery or medicines from the pharmacy – 28 (72%) – was undertaken generally by a family member when the patient was feeling unwell or was busy. Providing assistance with taking or using medicines – 10 (26%) – such as opening containers or pulling out tablets, was undertaken principally because patients had a physical problem or functional impairment such as rheumatoid arthritis. Support with administration was sometimes formulation dependent; for instance, the administration of Insulin injection, eye or ear drops and the application of creams to the feet or back. Other forms of support included reminding the patient to take medicines on time – 17 (44%), obtaining and reading information – 20 (51%), and giving advice on medicines – 14 (36%) especially for those with limited English or literacy skills.

Participants identified with intentional non-compliance were more likely to report receiving help with medication (chi-square, \( P=0.007 \)). Participants who were receiving help with medication (n=27/39, 69%) identified with 57 intentional non-compliance problems whereas those who were not receiving help with medication (n=16/41, 39%) identified with 27 intentional non-compliance problems. The reason for non-compliance was identified sometimes to be due to inappropriate advice or information provided to patients by their families. Some participants, for instance, reported relatives encouraging them to stop taking their medicines because their families perceived the harm of the medication in general to exceed the perceived benefit. A participant from an Arabic culture revealed that her family weighed up
the risks and benefits of medication, which influenced the amount of encouragement they gave to her to comply with her medicines’ regimen:

“My sister and my mother advised me to avoid taking too many medicines. Like for example Fesoterodine they told me not to take it. I told them ‘The doctor gave it to me’ but they said ‘Don’t take everything doctor prescribes, each medicine has a side effect.’” [Case 205-AR-F-57]

A second participant revealed a similar story:

“Sometimes my son – but I don’t always listen to his advice because I can’t stop taking some of my medicines... If I stop taking my sugar tablets for example I will be in trouble... If I stop taking my BP tablets, my pressure will go up... If I stop taking my inhalers, I will get in trouble... If I stop taking my painkillers I will be in pain... My son always tells me not to take too many medicines, it is dangerous for me.” [Case 406-AR-M-67]

A third participant declared that she did not take her cholesterol tablet for two months because of her son’s advice, as he thought that it was unnecessary and therefore should be stopped:

“My son said ‘Stop tablets, no more tablets’. First time doctor [a name of a doctor] give me 5 gram cholesterol and then go over 10 mg. My son lives in Pakistan, the middle one, every time he says ‘No take tablet, no, stop’. I am going to Pakistan, ticket booked. I stopped tablets, everything stopped. This medicine. I have stopped for two months, my tablets stopped. One day 10 o’clock, 11 o’clock I feel pain there and there and there and I take tablet and my daughter-in-law, she called my son and said ‘Hurry, mother not OK’. My son came and my face was a little bit yellow and straight away I go hospital; doctor said your BP and cholesterol very, very high.” [Case 601-PAK-F-65]

Strong evidence suggested that social support from family and friends can help patients take medicines correctly (Vaglio et al., 2004; Lee S-Y et al., 2006). However, researchers studying behaviours and outcome among older adults have hypothesised that social support might buffer the negative consequence of patients with limited literacy (Lee S-Y et al., 2006, Johnson et al., 2010). Johnson et al.
concluded that social support was mainly associated with better adherence for patients with adequate health literacy but not with limited health literacy (P<0.05) unless patients with limited literacy have a trusted person in their lives in whom they can confide. The reason for this was that limited-literacy patients were less likely to ask healthcare providers questions and infrequently brought relatives with them to the pharmacy. The findings of these studies were consistent with our study, which showed that participants who received help with medication from a family member were more likely to be identified with intentional non-compliance. One of the reasons for this might be because they listened to inappropriate advice or information.

A further reason for poor compliance identified in the present study was medical advice and prescription medication borrowing and sharing. Sharing prescriptions and medical advice among family members is commonplace (Avery, 2008). If a patient observes that a medicine successfully cured her condition or relieved her symptoms, she may associate the medication with that perceived effect and then willingly share the medicine with others who seem to suffer from the same condition. Patients may also resist throwing away medication that is no longer needed or has expired, believing it still has value and may be needed later. A participant reported sharing medicine(s) with his mother when interruptions in his supply occurred as both of them were prescribed medications for diabetes and blood pressure. Another participant revealed taking a medicine from her husband to manage a new symptom (i.e., constipation). Senna was discontinued by the GP recently but because there was a hoarding of Senna at home, this facilitated the husband sharing the ‘spare’ Senna with his wife. A further example was a lady who came to the pharmacy to ask for a further supply of Omeprazole tablets. The pharmacist told her that she had already been provided with a supply of Omeprazole but she claimed that she had run out because she was sharing this medicine with her father who was already prescribed Ranitidine (dual therapy). A participant [Case 203-AR-M-63] reported that if he wanted information on
medicines, he would ask his friends who were experiencing the same condition and taking similar medicines.

Not only sharing medical advice and information on the risk of a medicine but also sharing advice and information on the risk of a medical procedure was identified among participants. In close-knit communities, people know each other well and the suffering of one member of the community may be quickly communicated and actually felt by others. One first-hand story of success or failure may likely be much more powerful in shaping perceptions than scientific information or statistical data. This is what happened with some patients in this study who had heard many stories of relatives or friends suffering from previous negative experiences with medical care such as post-surgical complications, poor medical treatment or experiencing side effects of medicines. This resulted in lack of trust, confidence and faith in patients’ healthcare professionals and the healthcare system in the UK. Due to this, a few participants turned to the private sector which they perceived to provide them with better care, better services, and better medications, as in the following quote:

“I was afraid because one of my friends who had the same operation done to her in the past told me not to do it because it will leave a hole in my uterus. So, I got scared. I was also scared that some of the medical students will do the operation so I don’t want to do it... My friends told me that they do lots of mistakes... I went a year ago to [a name of a hospital]. For a consultation with Dr. [a name of a doctor] to ask whether I need to have an operation done to my uterus and to ask whether she can do it herself privately rather than doing it free in one of the NHS hospitals. She said she stopped doing operations now... I personally think that private hospitals provide better service and you get what you paid for. They are not as same as free hospitals that make lots of mistakes. In free hospitals, you see one doctor in the clinic and another doctor in the operation or maybe a medical student. That’s what makes mistakes.” [Case 205-AR-F-57]

A participant revealed that she refused to take an injection to relieve arthritis pain in her knees and neck because of the experience of another person who suffered negative reaction when having this injection in the knees and neck:
“No, no, no only when needed... He gave me injection here and in my shoulder... He also wants to give injection in my back and my legs but I am scared... Because my niece took the injection in her back and she became very stiff like ‘wood’... She was hurt and could not move... So, I got scared.” [Case 201-AR-F-62]

Supporting patients by giving incorrect advice or information or by sharing medicines or medical information can reduce adherence, complicate incorrect use, cause drug-drug interaction, lead to misuse or addiction, reduce care seeking, increase patient perception of ineffective treatment and harm the patient.

To summarise, almost half of the participants received help with their medicines, mainly from family members. This study identified the considerable role of patients’ families in their disease management in general and in medication-taking in particular. Families were frequently quoted as an important source of support. For the majority of participants, this help was sought on a regular basis and in regards almost all aspects of medicine management. The support was mainly sought by participants with poor educational level and language barrier. From 39 participants who received help with medicines, 26 (67%) reported having a low level of education (i.e., high school or below) and all of them stated that they had a first language other than English. The majority of participants who received help with medicines were younger – ages ≤65 (n=32/39, 82%) – and were on ≤8 medicines (n=22/38, 58%), which means that old age and polypharmacy may not be reasons for seeking help.

The effect of family on patients’ compliance and safety should not be ignored especially for patients from cultures that prize family interrelationship such as SA and ME cultures. SA and ME groups value family intimacy and have the advantage of cohesive and supportive family networks. In these cultures it seems more usual for a patient’s whole family (brothers, sisters, siblings, mother, father and sometimes cousins) to be over involved in treatment decisions. In Britain a doctor would expect to talk to the patient and his or her spouse only whereas, among Asian and Middle Eastern families, a family conference may be called especially
when serious matters need discussion. In some cases, the family’s influence determines whether or not the patients take the prescribed medicines or undertake a medical procedure. Families may have different attitudes, beliefs and perspectives regarding the risks, benefits and the value of medications. They may also have limited access to, and problem with interpreting, information which may have a direct impact on the patient’s compliance, especially for close-knit communities who know each other well and where the belief or perception of one member of the community may be affected by others.

Illustrating the extent of support provided to patients and the reasons for the assistance to the healthcare professionals in regards to how carers and participants divide tasks and share responsibilities can help in optimising medicine use, improving health outcomes and medicine management, and preventing any possible MRPs that may occur due to involving carers in patients’ care.

The result suggests that a family-centred approach to education by healthcare providers may be beneficial. It is therefore always important to ask patients during consultation to declare whether they receive help or assistance with their medication and to describe the nature of support provided, how often and in which circumstances or on which occasions help is needed, and whether the support obtained from these sources is accurate to promote proper use of medications. How family members view a medication, and the interactional relations between patient and family, should also become a vital question for clinical practice. The strong familial and social relations held within these societies can also be utilised by healthcare providers through involving family members in discussions and decisions about a patient’s treatment plan and consequently it can help establish a positive collaboration with the family that will translate to improve compliance and prevent any negative effect that may occur when involving an uninformed carer in a patient’s care.
6.4 Problems with use of non-prescription medicines

The use of non-prescription medicines including OTC and herbal medicines was widespread in south Asian and Middle Eastern participants. However, the use of non-prescription therapies varied from one participant to another. Generally, non-prescription therapies were used mainly to treat a condition or a symptom that did not require doctor supervision (i.e., minor ailments) and which was proven to be common, reasonably well-tolerated and safe like common cold and flu, cough, indigestion, pain, headache, diarrhoea, constipation and allergy. Participants also used non-prescription medicines to promote strength, enhance health and strengthen immunity. Others used non-prescription medicines as a second-line treatment rather than an alternative to a medicine for the treatment of major diseases such as diabetes and arthritis. Having competing beliefs in effectiveness of herbal remedies was evident with few participants, as illustrated in the following quotes:

“No… I don’t know what they call it in English. ‘Mithi’ I don’t know… She might know [pharmacist]… You know mithi? I use mithi with garlic… For my arthritis… I got lots of pain… Once a day… My wife prepares it for me every morning… It relieved my pain quite effectively… Four years… Yeh, I have been using heat patches and ice patches for about ten years for my back pain and shoulder pain… Yes… All my wife does.” [Case 702-IN-M-57]

“I use Indian herb called Ajwain… What I do is I roast four or five pieces of Ajwain… Then I make it as a powder… I take quarter tea spoon of Ajwain and half a spoon of Jeera (i.e., Indian herbs) and mix them together. The, I mix this mixture with chopped garlic (one small piece) and cod liver oil (one tea spoon)... This is for one person... I chew it every day and after half an hour, I drink 2-3 glasses of warm water... It is very good for knee pain… I have been taking it for about three months.” [Case 615-IN-M-74]

“I sometimes use Cinnamon along with my diabetes medications. No, only when I see my sugar level high… I take one spoon with milk at night or afternoon… I found it useful at lowering my blood glucose levels.” [Case 604-AR-F-52]
Some participants were persuaded by their families or friends to use herbal remedies, although some of them did not have any idea about the ‘rational use’ of these medicines:

“Yes... The thing is my wife buys them and makes some for me and herself in the evening... She takes in the evening five or six different things... Garlic tabs, Multivitamins, Cod Liver Oil and some tabs that are good for skin, hair and nails... I don’t want to take them but she gives me so I take... Because my wife asks me to take them [laughs]... Well, I suppose for good health.” [Case 107-OSA-M-57]

“I do take garlic tabs... because they [people] said it keeps your cholesterol level low... I take also Omega 3 because I am vegetarian... Again, I’ve heard that Omega 3 is good for bones... Yes, garlic I take one tablet a day and Omega 3 I take twice a day.” [Case 603-IN-M-51]

Others did not know that taking non-prescription medicine with their POMs can cause them harm such as ADR. One participant declared taking Aspirin as an OTC medicine concomitantly with Etoricoxib, which may result in an increased risk of gastrointestinal ulceration or disorder:

“I take Aspirin 75 mg... No, no I buy it myself... This comes from experience and my friends’ advice ... One at night but not always say about five days a week... For about two years... I use it as a precaution to thin the blood.” [Case 203-AR-M-63]

Those who used herbal remedies perceived that they are safe and have fewer or no adverse effects compared to Western medicines:

“Some might say with herbal remedies, you might not get any benefit but you could never get harmed of it... It is completely safe.” [Case 107-OSA-M-57]

“When I get sick I try to treat myself with herbal remedies as much as possible, because these are natural things that can never cause harm. Unlike traditional medications, they are chemicals and they are full of adverse effects!” [Case 615-IN-M-74]
Unwillingness to take non-prescription medicines was expressed by a number of participants due to past negative experience, fear of any possible drug interactions, disfavour of increasing the number of tablets used, and doubts about the efficacy and safety of many complementary medicines and traditional remedies.

In summary, SA and ME patients used non-prescription medicines mainly to treat minor ailments, to promote strength and enhance health. Only a few used them as a second-line treatment rather than an alternative to a medicine for the treatment of a major disease. Many patients in this study bought non-prescription medicines without consulting or informing a HCP and with encouragement from a family or a friend, which can be dangerous in some cases for sufferers of chronic diseases. Some non-POMs might affect the efficacy of prescription medicines in several ways and others might lead to toxicity. Not only might they result in MRPs and high rates of hospitalizations, but patients also might have an increased risk of mortality, depending on the type of remedies used (Dasgupta et al., 2006). Thus, pharmacists and HCPs need to question the use of alternative therapies when prescribing; awareness of these remedies and their potential problems and hazards needs to be raised amongst HCPs. Patients may end up receiving dual therapies from both Western remedies and traditional remedies, if both contain the same active drugs, which affects patients’ safety (Aslam et al., 2001).

6.5 Problems with the source, delivery, type and timing of information, which may lead to lack of information and/or understanding about the use of medicines

Twenty-two participants were identified with 24 problems associated with lack of information on illness or medicines. Participants in this study reported many problems with source, delivery, type and timing of information.
Problems with source of information

Seventy-seven participants reported their source of information, of which 37 (48%) participants reported one source, and 40 (52%) reported more than one source. Figure 6-1 describes what patients reported as their sources of information.

![SOURCES REPORTED BY PARTICIPANTS FROM WHICH THEY OBTAINED INFORMATION ABOUT THEIR MEDICINES](image)

Figure 6-1: Sources reported by participants from which they obtained information about their medicines.

Participants most frequently mentioned the GP (n=55), followed by pharmacists (n=31) and leaflets (n=27) as sources of information. The identification of the source was mainly driven by the language(s) that the patient and HCP can speak, followed by their views that a doctor is the only person who has acquired the knowledge and skills for providing information and solving any problem.

Doctors

Many patients from both ethnicities preferred to consult a doctor who speaks the language of their native country instead of English, and this was not dependent on English proficiency or literacy skills of patients. For example, a number of participants from both ethnicities with either limited or good English proficiency
identified a doctor who speaks the same language in particular to be their primary source of information. They explained that they can better describe their health problems to doctors who speak their own language and also better understand the information that was given to them especially given that most patients, even if they speak English, may not know medical terminology. Patients also expressed the belief that doctors from the same ethnicity shared the same language, social experiences and cultural beliefs, thus they were able to understand patients’ worries, concerns, problems, preferences and needs better:

“When our regular doctor takes charge looking at our illness... I mean me and my wife... We are OK... That’s particular doctor is what we would like to see specifically... We know him long time ago... He is aware of our shapes, health and illness... He is also Indian and speaks the same language, which is very important to us.” [Case 613-IN-M-64]

“He [GP] knows what you have and what medications you are on and what you need and also he is Pakistani and speaks the same language; that is the main thing.” [Case 504-PAK-M-81]

The preference to consult a doctor who speaks the same language could be due to the fact that the majority of participants from both ethnicities were first-generation immigrants (77/80, 96%) and their first language was other than English (75/80, 94%). Interestingly, the importance of consulting a doctor from the same ethnicity did not emerge for second-generation participants (n=3). This is possibly because the degree of integration and healthcare requirements varies between first- and second-generation immigrants (Macdonald, 2004). For example, a number of the first-generation participants in the present study had a restricted knowledge of the English language and a greater sense of isolation in terms of, for example, providing interpretation services, which made them prefer to see a doctor from the same ethnicity or, in a worst-case scenario, if patients could not access a doctor who speaks the same language they depended on their family or friend to act as interpreter, to provide them with information and sometimes to make decisions regarding their own care:
Chapter 6 – Results (Contributory factors to MRPs that may be specific to SA and ME cultures)

“My daughter orders and collects my medicines because I don’t speak English... She gives me information about my medicines... She [her daughter] asks the doctor usually and then she tells me what he says because I don’t speak English... She does everything for me.” [Case 201-AR-F-62]

“My son comes with me to the doctor because I don’t speak English... He helps me with everything because he is educated and he knows better than me... My doctor told my son and my son told me what each medicine is used for and I wrote on each box in Arabic.” [Case 209-AR-M-49]

Two participants, who were living alone, expressed dissatisfaction with the lack of interpretation resources provided by primary care health professionals, which hindered their ability to access information and to seek care especially given that they did not have a family member to act as interpreter:

“I feel very annoyed because of the interpretation problem. This GP does not offer you a translator... They are very lazy when it comes to this. I complained my times to my doctor and I told him that I need interpreter and I can’t speak or understand English but he told me to bring a friend with me as interpreter but my friend is not always free...Sometimes I try for months to find someone to come with me as an interpreter.” [Case 402-AR-M-65]

“I studied in another country so I don’t read or speak English. Even if I read, I don’t understand. What I understood is that they don’t like when a person doesn’t speak English. I don’t have any one to translate for me. Once I asked the consultant to have an interpreter to know how my situation was but he didn’t bring me one, which was annoying. The consultant told me that I have problem with my gallbladder; I thought that I have gallstones because I didn’t understand it in English.” [Case 210-AR-M-55]

The preference to consult a doctor from the same ethnicity was to the extent that some participants looked for and were willing to travel considerable distances to consult GPs who spoke their own language:
“My doctor is an Arabic person... He understands me and I understand him. Although my GP is a little bit far, I don’t want to change it.” [Case 403-AR-F-60]

Others were willing to wait for a long time to make an appointment or to see a doctor in the GP surgery who speaks the same language:

“We [participant and his wife] go to this particular doctor but we sometimes find it difficult to make an appointment with this doctor and it takes longer than necessary sometimes to get an appointment, possibly 10 days. He is also Indian and speaks the same language which is very important for us.” [Case 613-IN-M-64]

Many participants even revealed disappointment with the time spent during consultation with their doctor but they preferred to tolerate and adapt to this situation for the sake of seeing a doctor who speaks the same language:

“The time I spent with him is not enough... Well, he doesn’t say that directly but from the way he behaves you can estimate that... He is Egyptian, that’s why I have to tolerate him... I can’t speak English.” [Case 212-AR-M-80]

“No, sometimes they don’t give you time and they said ‘You came today to discuss this thing only, if you want to discuss other thing you should book another appointment’ because every patient has to stay no longer than 10 minutes with their GP... I don’t mind as long as my doctor is an Arabic person.” [Case 202-AR-F-61]

Despite the fact that many participants in the present study preferred to see a doctor from the same ethnicity, a few respondents who had a good level of English proficiency believed that the most important thing is to see a doctor who listens to and understands patients’ beliefs and concerns, and responds to their needs no matter of his/her ethnicity. The following quotes illustrated their beliefs:

“Ten minutes only, no good... My regular GP is British... She doesn’t want me to talk too much... Sometimes if she is not there, I see a Chinese doctor... He is better than her... He listens and understands.” [Case 213-AR-F-60]
“I don’t care if I didn’t see my regular doctor, what I care about is to be understood and helped by the doctor I have appointment with.” [Case 305-AR-F-32]

When participants in the current study were unable to access or failed to receive sufficient information from doctor due to illiteracy, language barrier, unavailability of interpreter or for any other reason, some felt empowered and managed their own care and made active decisions without looking for information from other sources. For example, one participant reported that she had never been told that cholesterol tablets have to be taken for life as a secondary prevention of cardiovascular diseases and thus she actively decided to stop taking her medicine:

“When I had high cholesterol, they gave me cholesterol tabs... When they checked my cholesterol after a few months, they told me that my cholesterol was back to normal... So I stopped the medicine for three months [laughs]... Nobody told me to stop or to carry on... The next blood test showed that my cholesterol was very high and the doctor asked me what did I do? [laughs]... I told him that I stopped the medicine... He told me to take it for life.” [Case 309-AR-F-44]

The identification of the source of information was also dependent on patients’ views that doctor is the only person who has acquired the knowledge and skills for providing information and solving any problem. Patients from both ethnicities identified doctors as the preferred and the primary source to find trustworthy and reliable information on illness and medicines. Some of the responses demonstrated unquestioning trust in their doctors. Unquestioning trust is where patients agree with any decision the doctor makes with regards to the patients’ health or medication regimen. As well as seeking information mainly from doctors, participants (n=59, 76%) demonstrated that the first source of call would be their doctor if they experienced any problem with their medicines. Participants affirmed a strong dependence, confidence and trust in their GPs to provide accurate information, passively following instructions without further consideration:

“[Laughs] Why would I read it [PIS]? There is no need... I agree with my doctor... He knows best.” [Case 612-IN-M-45]
“I go straight away to the doctor because he knows more about my medicines than anyone else.” [Case 701-IN-M-77]

“I put my full trust in the doctor... If I am going to die in their hands, I don’t mind [laughs].” [Case 708-IN-M-65]

“My doctor obviously would know better than me.” [Case 211-IN-M-59]

“They [doctor and pharmacist] don’t give you too much information but they are the experts... So, just take it [Laughs].” [Case 211-IN-M-59]

Despite their beliefs, the majority of patients who were identified as having lack of information or discussion revealed that their main source of information was GPs (15/22, 68%). Only five out of 22 (23%) regarded pharmacists as a source of information and three regarded PIL as a source of information. 10 out of 22 (46%) used more than one source of information. Despite using more than one source, almost half of the 22 identified with lack of information and discussion. This was possibly because the majority of them (7/10, 70%) reported family members or friends as a second source of information and this information may be incomplete, unbalanced and erroneous, as illustrated previously.

**Pharmacists**

Other than doctors, seven participants only regarded pharmacists as their primary source of information and 24 others reported pharmacists to be their second source of information after doctor. Participants who consulted pharmacists in general (31/78, 40%) had ambivalent views regarding pharmacists’ consultations. Many expressed negative viewpoints and reported that pharmacists were similar to doctors: they only provided the basic information regarding their medicines (e.g., how to take or use the medicine and therapeutic indication), whereas the more important and detailed information that patients needed and wanted to know (e.g., side effects that medicine might cause, how to cope with it, other medications that might interact with it, how long the medicine needs to be taken before it is
effective, consequences of missing dose, how effective is the medication in comparison to other medicines, new treatment coming onto market, how and when to stop their medication) were not provided unless patients asked:

“Pharmacists know quite a bit on medicines like side effects and something like that, so if there is a clash between two medicines or an expected side effect, they should tell you from the beginning... That’s what I believe but they don’t do it.” [Case 709-IN-M-66]

A second participant, who consulted a pharmacist for backup advice, reported that the pharmacist did not provide any help or assistance; rather, every time the pharmacist was approached for a problem he told the patient to consult his GP:

“I talk to him but I talk to him friendly... Nothing to do with my medicines... I told you if any problem happened with my medicines, I would see my GP... My GP is better... I don’t want to put him [pharmacist] in trouble [laughs]... I talked to him so many times but he said ‘No, no, no it is better for you to see your GP’... So I see no point in talking to him.” [Case 406-AR-M-67]

Participants who reported consulting a pharmacist revealed that this was partially because they could not consult a doctor who speaks the same language and thus they had to consult a pharmacist with whom they shared a language, as mentioned earlier, or because their doctors did not provide them with adequate information or time to ask questions, and thus patients valued any source of information to make informed decisions on how to manage their medicines effectively. Consulting pharmacists was not perceived as a substitute for receiving information from doctors but was seen as helpful.

Participants who hold positive views on pharmacists’ consultation were more likely to be those who had their MUR conducted or were counselled and provided with information that was tailored to their needs and preferences when approaching pharmacists:

“Once I asked them [pharmacists] about diabetic medications so a Lebanese pharmacist brought me to this room and told me information
which I wrote down in Arabic... My doctor speaks English so I take my son with me and he translates what the doctor says which I wrote down in Arabic.” [Case 209-AR-M-49]

“Yes, he [pharmacist] always gives good advice about my medicines and my wife’s medicines like indication, contraindication, reaction with other tabs... This kind of specific information that the doctor would not give thoroughly... Like my wife, her doctor, the one we like to see most, is putting her on lots of changes and those changes are happening very quickly... Like they put her on new tabs and these tabs started giving her wheezing effect so I had to run to the GP to get some Ventolin and I had to run to here to have the Ventolin dispensed... Those contraindications between different tabs were not explained thoroughly by the GP... Since then I started asking the pharmacist about every changes me and my wife has.” [Case 613-IN-M-64]

In fact, pharmacists’ involvement or role in providing information seems to be little that performing their expected duties such as MUR was seen as an extraordinary service which was highly appreciated by many participants:

“Yes, all... Before I was taking my medicines from a pharmacy in front of my GP surgery but for the last 2-3 years I’ve been coming to this pharmacy to collect my medicines... Because when I come to this pharmacy, there are some people the same as you, ask me about my medicines like whether this is the first time I take this medicine or whether I have side effects... They check and review my medicines...They give me advice and information more than any other pharmacy... That’s why I like to take my medicines from here more than any other pharmacy... Just to remind me and to give me more information which I might not know from my doctor.” [Case 205-AR-F-57]

“I wish that the pharmacist could speak to me more about my medicines, like last time I came to have two painkillers dispensed from here and the pharmacist told me not to take these two painkillers together because taking them together may harm me... So I was glad to know before using them.” [Case 213-AR-F-60]

“The pharmacist here is my friend... Usually I ask him about my medicines and he gives me all the information I need... He is better than the GP [laughs],” [Case 107-OSA-M-57]
From the discussion with patients, it was evident that the majority of them (n=47/78, 60%) had never discussed any matters with their pharmacist. The reason for not consulting a pharmacist on issues regarding medicines was that some SA and ME patients hold views that pharmacists are only supplier of medication. To these participants, pharmacists are just people from whom patients collect their medicines, nothing more. They perceived pharmacists as not being responsible or capable of more than dispensing their medications and thus avoided communicating with them. These participants were convinced that it was the doctor’s duty to tell them everything they were supposed to know about their medications, especially given that doctors are the HCP who hold their medical records and prescribe medicines:

“No... Never ever? No, I don’t talk to them [pharmacists]... I just take my medicines from here.” [Case 302-AR-M-83]

“No, I don’t ask them [pharmacists] because I don’t think that’s the solution with the pharmacists so I contact the GP straight away... I just order and collect my medicines from here.” [Case 502-AR-F-65]

In addition to the wider perception of pharmacists as just suppliers of medicines, which was held by both groups, the absence of a pharmacist or a staff-member assistant who speaks the same language as ME respondents distinguished the two groups. This was one of the reasons for not consulting a pharmacist among ME participants. Unavailability of a pharmacist or a staff member who speaks the same language as the patient may lead to lack of patient counselling and consequently poor patient satisfaction and adherence, especially given that much of the communication that takes place in the pharmacy is verbal. In this study there was one Arabic-speaking pharmacist among the staff and shifts despite the fact that four pharmacies out of seven were located in areas that are highly occupied by Arabic-speaking patients. One participant described her experience:

“No, I take my regular prescriptions to a pharmacy in [a name of a street]. The pharmacist there is a wonderful lady. She is Lebanese... So,
you get the chance to ask her about your medicines in Arabic… This pharmacy does not have Arabic-speaking pharmacists… I come to this pharmacy [no. 3] only if I am in [a name of a street] to buy Panadol or some cosmetics.” [Case 301-AR-F-54]

Another Arabic-speaking participant mentioned that she changed the pharmacy she used to collect her medicines to enable her to consult an Arabic-speaking pharmacist. She expressed satisfaction with the new pharmacy because the Arabic-speaking pharmacist wrote instructions about medication use in Arabic on the medicine labels:

“I have been coming to this pharmacy for a year because they have an Arabic pharmacist who translates and writes down everything in Arabic for us [participant and her husband]… I used to collect my medicines from [a name of a pharmacy] on the same road but they were all Indians and I could not ask to talk to them because I don’t speak English.” [Case 403-AR-F-60]

In all the seven pharmacies there was at least one Hindi-speaking pharmacist among the staff. Although there are several languages spoken among the SA population such as Urdu, Gujarati, Bengali, etc., Hindi is commonly understood by all the SA population, so accessing a pharmacist who speaks a similar language as the SA group was not an issue for SA patients in this study. However, it was claimed by an Indian pharmacist in one pharmacy that the unavailability of a Bengali-speaking pharmacist in the pharmacy hindered the ability to conduct MURs for Bangladeshi patients.

Pharmacists need to promote themselves more as an information source. This may be more successful if they make an effort to increase prescription medication counselling. This would confirm in patients’ minds that pharmacists have the knowledge to answer questions and that provision of prescription medicine information is a necessary part of their responsibilities (Thompson and Stewart, 2001).
Patient information leaflet

The third source of information was the patient information leaflet (PIL), which indicated that, despite the growth in use of audio, video, computer technology and the internet for providing information, the leaflet remained the most widely used method as a source of information after doctors and pharmacists. However, the majority (53/78, 68%) did not like the idea of reading a PIL either because they found it to be too long, difficult to understand, increased their anxiety and premature discontinuation of treatment, and contained complicated medical terms that were difficult to understand. Others revealed that their GPs and pharmacists provided them with necessary information and that there was no more necessary information the leaflet can add. The next excerpt illustrates problems described with PILs:

“I got frightened sometimes when I read leaflet of some medicines especially their SEs... Lots of these medicines have got quite few SEs... Putting on weight was one of them and they also said you may have heart problem, kidney problem... Instead of curing these problems, you might get them [laughs].” [Case 107-OSA-M-57]

“Not really because leaflet has some medical terms that are really complicated, difficult to understand and long to read.” [Case 202-AR-F-61]

“All the leaflets are the same. They all say dizzy, headache, vomiting. The reaction is all the same for all the tablets, they cover everything. It is no point really.” [Case 608-IN-F-50]

Those who preferred to read the PIL revealed that the reason for this was to remind themselves of what had been communicated verbally by HCPs or because the PIL was the only source of information that can provide the patient with more detailed information about medicines that no HCPs provide, such as the recognition of adverse effects:
Chapter 6 – Results (Contributory factors to MRPs that may be specific to SA and ME cultures)

“I always read leaflet... I don’t use a medicine without reading the leaflet... I see SE because I use lots of medicines so I make sure they don’t interact... This kind of information, nobody tells you anything about it.” [Case 205-AR-F-57]

“I always read the leaflet because I want to see what the SEs are... I just want to know if there is going to be any heart problems with the medications cos I suffer with anxiety and panic attacks so I try to stay away from medications that will trigger anxiety or panic attack and if I am taking it, it needs to be able to be used with Diazepam and Citalopram that I take... As long as I know that the two are compatible, that is fine.” [Case 208-PAK-F-35]

Problems with type of information

When asked about the information received about their medicines: (63/76, 83%) participants revealed that the information received on medicines was enough whereas 13 (17%) participants revealed that they required more information, of which the majority wanted the information to be on their medicines (n=10) and some required information on illnesses (n=2) and one wanted information on both illnesses and medicines. The 13 participants who required more information used a large number of POMs (mean 6). The range (3-11) showed that participants who used a small number of medicines also identified that they were not having adequate information or discussion. The majority of patients who wanted comprehensive information about medicines were those who experienced some adverse drug reactions (8/13, 62%) compared to the ones who have never had an experience.

Discussion with participants in this study revealed that basic information (e.g., the name, indication, dosing instruction) on medicines was enough but the more detailed information (e.g., interactions with food or other medicines, commonly encountered side effects and what to do if a side effect is experienced) which was essential to support appropriate and safe medicine-taking was lacking. Many acknowledged the importance of more detailed information that is tailored to their own situation and needs and preferences, and it could be divided into information
on illness and/or medicines. Where illnesses were concerned, some participants were interested in disease diagnoses or prognosis:

“I think I need more but not about my medicines, about the inflammation I have in my body... It is upsetting me a lot... The doctors thought that the red spots are acne but then they discovered that I have infection in my blood.” [Case 711-AR-F-18]

Where medicines were concerned, the curiosity was mainly about side effects of treatment, followed by long-term safety, drug interactions and contraindications, new medicines available on the market and information on treatment alternatives. There was also more complex interest in medicines to know the pharmacological action of a medicine in the body and to know whether there was a cure for the disease or whether patients really required medicines. Participants voiced that they preferred to be warned about the side effects before medicines were prescribed and to be informed and updated about the dangers of taking medicines for the long term whilst taking medicines. The type of information respondents wanted about their medicines is consistent with the findings of some, but not all, previously published studies. Most have shown information on side effects of medication to be a priority of patients (Thompson and Stewart, 2001, Samman and Chaar, 2013).

The data of this study showed that the more consultations with a hospital consultant, the more likely that participants would be identified with intentional non-compliance (chi-square, $P=0.043$). The majority of participants for whom 45 intentional non-compliance problems were identified reported being under the care of a consultant ($n=22/33$, 67%). Those who reported that they did not have outpatient consultations ($n= 20/46$, 44%) were identified with 39 intentional non-compliance problems. The data suggested that the more patients consult a HCP, the more they are likely to get information about their disease and treatment, and the more information patients get may impact on the fact that they do not want to take their medicines either because the information from different HCPs was conflicting, which may create confusion, or because the information was scary and caused
unnecessary anxiety, particularly in relation to side effects. One participant, for example, expressed dissatisfaction due to conflicting advice or information provided by her GP and her hospital consultant about stopping her Warfarin treatment, which left the patient feeling more confused and distressed and with no clear understanding of what action to take:

“In September, my regular doctor was travelling; I saw another doctor. She told me that she called my consultant in the hospital and he told her that I should stop Warfarin. She told me ‘You should stop Warfarin, you have been taking it more than enough’. I took an appointment with another doctor just to double check whether I should stop it. He said ‘I can’t decide, I am not your doctor’. I told him to refer me to hospital for a scan and blood test just to check that there were no clots but he said ‘I can’t, I am not your doctor’. I stopped taking it for 20 days and when I was crossing the road, I fainted on the street. When I went to hospital, they said ‘Who told you to stop it? You shouldn’t have done that, how did you live 20 days without it?’ So, I was frustrated – what if something bad happened to me!” [Case 207-AR-F-40]

Another participant who was under the care of a hospital consultant stated that the best way to become better informed is to look for information from a variety of sources and not to depend only on HCPs, who give you contradictory advice or information and make you more confused:

“I think they [HCPs] give you enough for you to go and research stuff for yourself... Because one doctor will tell you one thing and another doctor will tell you another thing, which makes you more confused... You get the name... Then you can research websites, go to forums, talk to other people... This is what I do myself... Sometimes one doctor tells you that you need to take this tab because it is really beneficial for you and then another doctor will say 'No, I don’t think you should take it because you are asthmatic.’” [Case 208-PAK-F-35]

A third participant expressed the same concern that she was getting inconsistent advice from different HCPs:

“I take information mainly from the rheumatology department in the hospital [a name of a hospital]... There is professor (a name of a person) and 4-5 other people with her... This professor is hard to see all the
times and the others I don’t trust... Because everyone says something different than the other so I don’t get any benefit from seeing them.” [Case 204-AR-F-45]

A further participant reported that he received alarming information from his hospital consultant abroad about the side effects of taking Metformin and Atorvastatin which affected the way he took these two tablets:

‘In [the name of the European Country], my consultant told me it would be better, if I stop Metformin... You are a healthcare professional and you should know that taking too many medicines may kill you... These are chemicals... I feel really scared... My GP in the UK at the beginning gave me 500 mg of Metformin but after the heart operation I had, he increased the dose to 850 mg twice a day and when I asked him to decrease the dose to 500 mg, he refused and said “I can’t until your blood sugar goes down”... I should take one tab in the morning and one tab in the evening but to be honest after what I heard I am now taking one tab only... My doctor doesn’t know about this.’ [Case 210-AR-M-55]

He added:

“I should take one tab a day [Atorvastatin]... 40 mg a day... But I take half a tablet a day... You write 40 mg a day, I don’t want problems with my GP... The consultant in the European country I told you about told me that this cholesterol dose is too high and you don’t need such a high dose... It may affect your liver and kidneys... When I was prescribed this medicine, I didn’t use it at all but for the last three years, I have been using half tab a day because there was an Iraqi doctor here in the UK, he told me “It is wrong to stop taking your cholesterol tabs.”’ [Case 210-AR-M-55]

This result should be interpreted with caution because no figures were found to show the rate and/or content of counselling given by hospital consultants. Thus, how consultants interface with their patients and what type of information they provide has to be tested in future studies. This finding is inconsistent with other findings that showed that the more information that is given, the better is adherence (Maidment et al., 2002). It is well known that providing patients with information about prescribed medicines is essential to understand the benefit and
risks of medication and to facilitate their appropriate use (Horne, 2001). However, providing basic information such as how and why to take medicine does not guarantee the appropriate use of medication; rather the information should be tailored to meet the needs of the individuals (Peveler et al., 1999). People prescribed the same medicines may require different levels of information. For example, in this study some participants reacted by becoming actively involved with their treatment and seeking detailed information about aspects such as possible side effect of their medicine and how to cope with it. Others, in contrast, responded with more ‘avoidant’ coping strategies, for example, by thinking about their illness and medicines as little as possible or wanting others to ‘take charge’, and may find additional information unhelpful or even distressing. Thus, the quality of the information is more important than the quantity. The quality of information refers to the extent to which individuals perceive that information has met their needs and that they are satisfied with the information provided (Horne et al., 2001).

Problems with timing and delivery of information

Besides the content and type of information, also the timing and moment of providing information was seen as a barrier for meeting patients’ health and medicine needs. There were inconsistent views among participants regarding the appropriate time for providing information. Many participants reported that it was enough to provide verbal information on medicines at the time of diagnosis or first prescription whereas others wished the information to be repeated and updated regularly during routine consultations. Those who reported that the information should be given only on prescription of new medicines revealed that they knew the necessary information about their regular medicines as they had been taking them for several years. However, (11/63, 18%) participants who did not want more information on their medicines identified with lack of information.

Participants who revealed that they wanted more information complained that information was provided only the first time a prescription medication was given or upon request:
“Usually yes when it is something new but with the ones that I have been taking on regular basis no.” [Case 503-IRN-f-63]

“I think I need a bit more... Both medicines and health... He [doctor] does but I need to ask to be given information.” [Case 105-TRK-F-33]

Their preference for receiving information on a regular basis was explained as some participants described how their information desires may change depending on their experiences and needs. A participant said:

“I would like to have regular blood tests and to be given up to date information to see what methotrexate is doing to my body because it is nice to know that you take a drug that does not destroy other parts of your body.” [Case 607-IN-F-62]

A further reason was because of difficulties remembering verbal information. This was not purely because of older age since the majority of participants (12/13, 92%) who expressed their desire to have more information and their willingness for information to be updated and repeated were ≤65 years old. One younger participant, for example, reported her need for information to be repeated and updated:

“I think I need a bit more. I don’t mind to be reminded or to be given new information... Both on medicines and health.” [Case 105-TRK-F-33]

Forgetting information was mainly because of mode and delivery of information (e.g., providing spoken information rather than written instructions). It was identified that the way the information was delivered to many patients by HCPs was not tailored to their preferences and needs. Many patients indicated that the only medicine information they received was in the form of verbal dosing instructions which can be easily forgotten for some participants. In addition, patients had never been told about alternate forms of information and had never been given any written medicine information except the patient information leaflet (PIL). Even the PIL was not given to all patients. Two participants [case 206-AR-M-66] and [case
604-AR-F-52] reported that they had appealed to a technician pharmacist who refused to supply one of their medicines with a PIL. The technician claimed that in [(case 206-AR-M-66), the medicine was regular and thus there was no need to supply the patient with a PIL but in (case 604-AR-F-52)] the medicine was new and prescribed for the first time.

Written instructions presented difficulties to some patients with low education or literacy and non-native speakers. It was identified that the majority of participants (10/13, 77%) who wanted more updated and repeated information had no university education and none of them had English as their first language. Doctors routinely take for granted patients’ ability to read and understand all types of health-related materials. In reality, many patients have difficulty communicating with their healthcare professionals and following up self-care instructions due to poor understanding of basic health vocabulary, limited background health, limited education and limited native-language skills. One participant reported that her illiterate mother [case 607-IN-F-75] did not receive information she needed in a useful format and thus did not have the necessary skills to take, analyse or use the information she was given to make the appropriate decision:

“My mother [case 607-IN-F-75] complies very badly... She does it all the time with all her medicines... I tell her the information the doctor told me but she can’t understand the information given to her, she gets confused... She is illiterate and she can’t speak or read English. The doctor gives us only verbal information nothing more.” [Case 608-IN-F-60]

Those who had limited language or literacy skills reported relying on their family members to obtain information from GP surgery or pharmacy and interpreting English verbal or written information about medicines. They reported their disappointment with the amount of information available in their native language. A participant revealed that she would welcome leaflets in her own native language. This participant had to rely on her busy husband all the time to translate the information obtained from the patient information leaflet, which made her
husband frustrated and made her modify the way she took her medicines rather than asking her husband for further translation:

“I get information from my husband because I can’t speak or read English so he reads the package insert and explains the information for me... I wish they could provide leaflets in Arabic so I can read myself without asking the help from my husband because he gets upset sometimes and says ‘Just take it’ [laughs]... I make some changes, for example, I try not to take my medicines if I don’t need.” [Case 313-AR-F-44]

In summary, in the current study there was a great demand or reliance on HCPs who speak the same language as the patient for information. There was also limited access to verbal and written information provided according to patients’ language skills and literacy levels. In addition, there was a desire for information to be repeated and updated during regular consultations. Thus, HCPs have responsibility and a duty of care to provide high-quality, tailored information (verbal and/or written) to patients to ensure their safe use of medicines.

6.6 Perceptions of healthcare professionals and difficulties related to access and organisation of the healthcare system

Difficulty seeing a practitioner from the same gender

Seeing a male doctor was regarded by a few participants as another issue facing SA and ME female patients in considering their medicines and health needs and concerns. They felt uncomfortable talking to or being examined by a male practitioner:

“I have problem with seeing my regular doctor... They change doctors; sometimes I see a male doctor and sometimes a female doctor... I don’t like seeing a male doctor; I feel more comfortable talking to a female doctor.” [Case 308-AR-F-55]

“It is quite uncomfortable because it is not like a lady... I can talk to him but I can’t let him touch me for examination; I just don’t uncover.” [Case 506-PAK-F-78]
Lack of emergency GP or nurse home visits

Lack of emergency GP or nurse home visits was also mentioned as a barrier by one SA patient in having her medicines and health needs and concerns met. One participant, who was physically incapable of coming to the surgery and was transported by his full-time worker daughter to the surgery, complained that his GP in Brent did not offer home visits service, unlike his previous surgery in Barnet. His daughter justified that the reason behind this was due to living in an area with a high level of deprivation and full of ethnic minorities, unlike Barnet which is full of White British and is less deprived. She suggested that the GP surgery should provide special services for the elderly who need special care and attention, such as offering home visits to those who are unable to go to the GP surgery due to issues with mobility and general physical health. The following quote from the daughter illustrates the problem:

“...I do have difficulties with them because they are old people and I find that they [GP surgery] don’t make the effort to make my life easier for me, so for example I went to the GP surgery on the foot for my dad... The GP said ‘Come tomorrow morning to see the nurse’... What for? He just needs to pick up the phone and say to the nurse ‘I need you to go to [the patient’s address]; I’ve got a gentleman who is diabetic, unable to walk and needs to be seen’... So now I am going to take another day off just to see the stupid nurse... They make my life very difficult here in Brent but in Barnet [where they come from] it is more... It is a white area so the doctor there Mr. [a name of a doctor] came down many times to our house to see my father... So it is different.” [Case 607-IN-F-75]

Problems related to consultation times and relationship with doctor

Many participants perceived that the discussion with the HCPs regarding the progress of their illnesses and reviewing of their medicines was inadequate. They found that the consultation time with the GP was rushed and they were not always listened to. This was voiced as a barrier for them to raise issues and concerns about their illness and medicines with their doctors, as illustrated in the following quote:
“No, they are just so busy. They don’t listen; just get you out in 10 mins. I’ve been told in that practice that my 10 mins are up and she [doctor] spent five mins looking at my computer record to find out who I am and then, just when I was about to tell my problem, she said ‘Your 10 mins are up, sorry; make another appointment’. So, I had left the practice in the past without actually saying what my problems were... I go only if I got a problem but nobody asks me how I am getting on... I think they are very busy and they don’t actually listen to you. They [doctors] are in and out.” [Case 608-IN-F-50]

Some participants revealed that they could not ask questions or discuss more than one problem each visit because their doctors were very busy and had no time to spend with their patients:

“No, they don’t give you time and they said ‘You came today to discuss this thing only, if you want to discuss another thing you should book another appointment because every patient has to stay no longer than 10 minutes with his/her GP.’” [Case 202-AR-F-61]

A participant illustrated that her GP surgery did not have enough doctors to do a proper monitoring or review for patients:

“They [GP surgery] can’t employ more doctors or spend more time with the patients... This starts hurting us... There are only one or two doctors in my GP surgery... sometimes emergency or locum doctors who hardly know you... So those changes and stuff affect us.” [Case 613-IN-M-64]

The findings from this study showed that patients who reported having inadequate time with their GPs accessed care more (hospital admission 6/11 [55%]; A&E consultations 8/11 [73%], emergency GP consultations 7/11 [64%]), had poor adherence (5/11 [46%]) ADRs and DIs (6/11 [55%]), and lack of information (8/11 [73%]). More time means that there is time to listen to the patient, to arrive at a better understanding of the patient’s concerns and come to a more accurate and thorough diagnosis, to focus more on the patient and on the disease, and to have more time to work together to arrive at an acceptable treatment plan which may improve health outcomes. In contrary, not considering patients’ perspectives, wants, needs and preferences within the consultations and not involving them in
decisions about their treatment plan increased patients’ dissatisfaction and anxiety and influenced their adherence. One participant felt she was not taken seriously or treated as an individual. She felt that her GP held a stereotypical view of people who attempt suicide as crazy, which influenced her medicine-taking behaviour and interaction with her GP:

“My only problem is with my regular GP... He doesn’t listen to me, he doesn’t make eye contact, he doesn’t do anything, neither a check nor a test... I have shoulder pain for more than a year and he did not do anything about it... There is a total ignorance on his behalf... No attention is given to me at all... The problem with my doctor is that he thinks that I am mentally affected and crazy... He doesn’t listen to me and this is what increases my anxiety and depression and when I go back home I take three tabs rather than one because I am so stressed from visiting.” [Case 507-AR-F-39]

Another participant viewed his doctor as insensitive, inconsiderate, unsympathetic and disinterested in his actual needs and beliefs in the following quote:

“I had my shoulder dislocated in 2001 because of the epileptic attack... Then, I was transferred to hospital... I told the consultant that my shoulder was dislocated but he didn’t believe me and he did nothing about it, just an X-ray and the X-ray showed nothing abnormal. The consultant told me that I had only lack of calcium so there was nothing to form my bones and he prescribed calcium for me... Since then my shoulder is hurting me on and on and on, so my sister told me to go to that person [the alternative medicine practitioner] because our friends went to him and they recommended him to us. Now my shoulder is completely gone out... My GP told me that they will do an operation for me to look at my shoulder but I refused because they are the people who messed it up in the first place; they didn’t believe me... If they looked at it at that time [2001] and gave me something to hold it in one position, I wouldn’t be in this position. All the time they were telling me that you were either fighting or you injured yourself.”

He added:

“I had indigestion because of using the Tegretol... I spoke to my GP and he didn’t believe me, he said ‘Don’t worry, every medicine has a side effect’, but I started to feel unwell. Then, I spoke to the drug company
that makes the Tegretol, and they said to me ‘Don’t listen to what GP says, stop the medicine and speak to your consultant’. Then, I spoke to the consultant and I told him ‘Listen, if you will not change the Tegretol for me, I will stop taking it’. Then, the consultant spoke to the GP and told him to change the Tegretol to this one here [Keppra] and he also prescribed this one [Omeprazole].” [Case 702-IN-M-57]

A number of participants felt neglected and detached due to the lack of attention given by their GP and described their fears of not being supervised more closely and not even being referred to a hospital specialist despite their request, which led to frustration and exasperation. When a participant wanted to be referred, this may indicate a lack of trust in the competence and resources of primary medical care provider or a strong belief in the competence and resources of the consultants. One participant described her experience:

“I demanded to be referred to see a hospital consultant and even then I got referred to a GP who is still struggling... If they [GP and nurse] have not got the skills to assess the situation, may be they can refer you faster to a specialist especially for the diabetic people because they have new drugs, new medicines, new access, new research.” [Case 608-IN-F-50]

Bad relationship and lack of trust in healthcare providers led some respondents to be less likely to listen to the doctor’s advice and subsequently less likely to adhere to their medicines. One participant revealed:

“My mother complies very badly [Case 607-IN-F-75]... Mostly with her Metformin and Insulin... She does it all the time... I think my mother does not believe that the doctors know what they are doing. For example, with diabetes the team do not understand that she has other problems. They just look at her sugar level and say ‘Your sugar level is up or down’. They don’t understand that when she has stomach pain she’s got maybe gallstone. Every time she is in pain. She misses meals. So, her sugar is not controlled. Sometimes is high and sometimes is low. Plus she tends to have bigger meals at lunchtime than evening time but the doctor prescribed her a bigger dose in the evening. So, there is a lot of miscommunication on behalf of the team and not understanding the lifestyle of the patient. Because in our countries, I mean the hot countries, as you know we tend to eat bigger meals in the afternoon
than in the evening because it is hot and we are tired, but in this country they eat more at nighttime.” [Case 608-IN-F-60]

Another participant who had a bad relationship with his regular doctor requested to have another ‘good’ doctor who can supply him with more information and conduct more regular monitoring and review. This bad relationship influenced his medicine-taking behaviour, communication with his GP and information seeking. For example, this participant could not recall for what reason he was taking Bisoprolol, Atorvastatin and Furosemide. He also reported that he stopped taking Atorvastatin because he did not think it was necessary and revealed that he was reducing the dose of Metformin once or twice a month from two tabs a day to one tab a day (‘sometimes’ on the Likert scale):

“I don’t like to go to the GP... Because my regular GP is Pakistani... When I told him that I smoke and drink alcohol, he started showing me the other face... He doesn’t listen to me and I don’t like him... I don’t understand his explanations about my medicines and he doesn’t give me any advice... Tomorrow I have to go to the hospital for ECG because I have chest pain so I asked to be referred... He didn’t bother to refer me even though I told him that I have chest pain... I need more information and I need a good doctor who can regularly review and check my medicines.” [Case 214-AR-M-45]

Good communication (i.e., a sympathetic doctor interested in patient’s worries and expectations and who discusses and reaches agreement on the problem and treatment), partnership, enough information, additional time and staffing – all these factors can facilitate patients’ desire to become more involved, engaged and responsible for decision-making for their own care. Even for those who did not want to be involved in their own care, trusting their doctors and nurses to care for them and to make appropriate treatment decisions, being able to ask questions and understanding how decisions were made is important.

Patients’ participation in their own care is limited by many factors such as rejection of new patient role, lack of health literacy and lack of medical knowledge, lack of confidence in own capacities and type of decision-making required; for instance,
most participants want to participate in major decision-making (e.g., whether to undergo coronary bypass) but are less interested about minor decisions (e.g., prescription for their illness) (Longtin et al., 2010). In addition, the desire to participate in decision-making and to be involved in the treatment process is inversely proportional to the patient’s disease severity in most of the conditions. Other obstacles that may also hinder patients’ participation include older age, being a male, from low socioeconomic class and from ethnic minority background. Finally, patients who use alternative medicines might be more involved in healthcare-related decisions, although these findings lack consistency between studies (Longtin et al., 2010). Among healthcare workers, the acceptance and promotion of patient participation are influenced by desire to maintain control, lack of time and type of illness. Primary care physicians were more likely to encourage patient participation than specialists. Additionally, non-White physicians were less likely to encourage patient participation (Longtin et al., 2010). It can be seen that there are many obstacles hindering participation in patients’ own care which are applicable to our study. By highlighting these barriers, HCPs can estimate what level of involvement patients can have, and how to address these barriers in order to support patients and encourage them to participate in their own care.

Key messages from Chapter 6

- The HCPs should be aware that fasting may mean changes in medication-taking behaviours, and thus HCPs should support Muslim patients by talking to them more openly and providing advice in relation to their religious needs. The issue of altered medication-taking behaviours in fasting should be included in MUR.
- HCPs should be aware that travelling abroad back to patients’ home land or to take religious journeys may mean altered medication-taking behaviours, duplication of therapy and potential adverse drug reactions among SA and ME participants. Therefore, HCPs should ask patients about medicine-taking and obtaining practices during travel period, etc., and about other possible factors that may influence adherence and patients’ safety. The issue of altered medication-taking behaviours during travel should also be included in MUR.
• Patients with chronic diseases who are going for Hajj should have enough time to discuss it with a HCP and to consider a management plan for their illness. Pre-Hajj education seminars should be conducted.

• HCPs should be aware that family support may influence medication-taking behaviours. The result suggests that a family-centred approach to education may be beneficial. It is also important to ask patients during consultation to declare whether they receive help or assistance with their medication and to describe the nature of support provided.

• How family members view a medication, and the interactional relations between patient and family, should also become a vital question for clinical practice.

• The strong familial and social relations held within these societies can also be utilised by healthcare providers through involving family members in discussions and decisions about the patient’s treatment plan and consequently it can help establish a positive collaboration with the family that will translate into improve compliance and prevent any negative effect that may occur when involving uninformed carers in patients’ care.

• A few participants revealed using non-prescription medicines as a second-line treatment rather than alternatives to a medicine for the treatment of a major disease. Therefore, pharmacists and HCPs need to question the use of non-prescription medicines when prescribing and during MUR; more awareness of these remedies and their potential problems and hazards need to be raised amongst HCPs.

• The pharmacists need to promote themselves more as an information source. This may be more successful if they make an effort to increase prescription medication counselling. This would confirm in patients’ minds that pharmacists have the knowledge to answer questions and that provision of prescription medicine information is a necessary part of their responsibilities.

• There is a great demand or reliance on HCPs who speak the same language as the patient for information.

• There is limited access to verbal and written information provided according to language skills and literacy levels.

• HCPs have responsibility and a duty of care to provide high-quality, tailored information (verbal and/or written) to patients to ensure their safe use of medicines.

• There is a desire for information to be repeated and updated during regular consultations.

• Some participants felt unable to communicate their needs and were concerned about the lack of supervision received. The main features of the poor supervision were lack of time given to patients by HCPs to review their medicines or monitor their illness, lack of doctors, bad relationship with doctor, and lack of trust and confidence in healthcare professionals and system.
Chapter 7  Comparing South Asian and Middle Eastern participants

Introduction

This chapter describes the differences between SA and ME participants in terms of response rate, demographic details, medication-taking behaviour, and pharmacy and health service issues experienced by these two populations. Poor participation was detected among SA women. Looking at the demographic details, some differences were found between SA and ME groups in terms of age, religion, main language and year of coming to the UK. The principal distinctions in terms of medicine use and service access between the two groups were found in the following: the extent to which participants reported consulting a pharmacist, the absence of a pharmacist who speaks the same language among ME respondents, the use of multiple pharmacies, access to GPs and other services, the extent of family support/help with medicines, and medication-taking behaviour.

Response rate and demographic details

An equal number of SA (n=40) and ME (n=40) patients participated in the study. However, the response rate was lower in SAs (40/54; 74%) compared to MEs (40/46; 87%). From the data SA women were less likely to participate in this research study compared to SA men and ME men or women. Almost equal numbers of (22/40, 55%) men and (18/40, 45%) women of ME origin participated in the study while only nine (22%) women from SA background participated in this study compared to 31 (78%) men. In this study, 18 of those patients who were approached were unable to participate and the most common reason for non-participation was language barrier (n=14) (i.e., inability to speak English). Of those ineligible as a result of language barrier, eight described themselves as of Bangladeshi origin and 11 of female gender. Those of the female gender who could not speak English were more likely to be older women who have been living in the
UK for a longer time than other immigrants but did not learn English as they thought they would not need to use it.

A second reason for poor participation among SA women may be due to the fact that the researcher is not from the same ethnic origin, which might cause SA female participants reluctance in taking part in the study. However, this was not the case for SA male participants. Researchers Fenton and Sadiq-Sangster (1996) found that SA women were more open to discuss their concerns, problems and needs when talking to researchers whom they saw as ‘one of us’. A further possible explanation for poor participation could be due to the fact that SA females access services less (Chew-Graham et al., 2002) and thus they may not come out to get their medicines. In this study, a number of SA women were eligible to take part but they sent their husband to order and collect their medicines from the pharmacy on their behalf, which hindered their recruitment.

Women in immigrant Asian families can be very isolated. Some are discouraged from travelling alone on public transport and, as their husbands often use the household’s car for work, there is no easy way for them to access care, health education or language classes (Macdonald, 2004). A study in East London, for example, reported that many Bengali women are still presenting with very advanced stages of breast cancer. Another potential obstacle to SA women’s participation could be lack of permission or approval from extended family members since some women in the SA group may have to take their family members’ opinions or views into consideration before making decisions (Ibrahim and Ohnishi, 1997). Based on the findings, it seems that researchers may find it difficult to access this particular group of women and it may also mean that SA women may have service access issues due to cultural barrier. Results of statistical analysis in the current study showed that female patients were more likely to be identified with problems attributed to access to services (chi-square, $P=0.009$).

Looking at the demographic characteristics of participants, some differences were found between SA and ME groups in terms of age, religion, main language and year
of coming to the UK. The data indicated that ME participants tend to be younger than SA participants ($t$-test, $P=0.000$). The mean age of SA participants was 62.80 (range 51-81 years) whereas ME individuals’ mean age was 52.58 (range 18-83 years). The data also suggested that ME participants were less likely to use English as their first language (chi-square, $P=0.022$) compared to SAs. Based on the findings of this study, the data also showed that ME participants were more likely to be relatively newcomers ($t$-test, $P=0.000$) (mean 1993, 1970-2011) compared to SAs (mean 1974, 1956-2001). Muslim participants tended to be more in the ME group (40/40; 100%) (chi-square, $P=0.000$) than the SA group (14/40; 35%).

Both groups tended to have low socio-economic status in which participants from both ethnicities were less likely to have a university degree or to work. Thirty percent (12/40) of SA and 38% (15/40) of ME participants had a university or above qualification. Seventeen percent (7/40) of SA and 10% (4/40) of ME participants were working.

**The extent to which participants reported consulting a pharmacist**

From the discussion with patients, many (n= 47/78, 60%) reported that they had never discussed any matters with their pharmacist regarding their medicines but, for a small number of participants (n=7), the pharmacist was regarded as their primary source of information, and it tended to be that those who reported the pharmacist as their primary source of information were Indians. From the data, it seems that MEs (31/40, 78%) were less likely to consult a pharmacist on aspects and issues regarding their medicines (chi-square test, $P=0.002$) compared to SA participants (16/40, 42%), in which language might be one of the reasons for poor consultation.

**The absence of a pharmacist who speaks the same language among ME respondents**

In addition to the wider perception of a pharmacist as just a supplier of medicines, which was held by both groups, the absence of a pharmacist or a staff member who
speaks the same language as ME respondents distinguished the two groups. This was one of the reasons for not consulting a pharmacist among ME participants. Unavailability of a pharmacist or a staff member who speaks the same language as the patient may lead to lack of patient counselling and consequently poor patient satisfaction and adherence, especially given that much of the communication that takes place in the pharmacy is verbal. In this study there was one Arabic-speaking pharmacist among the staff and shifts despite the fact that four pharmacies out of seven were located in areas that are highly occupied by Arabic-speaking patients. One participant described her experience:

“No, I take my regular prescriptions to a pharmacy in [a name of a street]. The pharmacist there is a wonderful lady. She is Lebanese... So, you get the chance to ask her about your medicines in Arabic... This pharmacy does not have Arabic-speaking pharmacists... I come to this pharmacy (no. 3) only if I am in [a name of a street] to buy Panadol or some cosmetics.” [Case 301-AR-F-54]

Another Arabic-speaking participant mentioned that she changed the pharmacy she used to collect her medicines to enable her to consult an Arabic-speaking pharmacist. She expressed satisfaction with the new pharmacy because the Arabic-speaking pharmacist wrote instructions about medication use in Arabic on the medicine labels:

“I have been coming to this pharmacy for a year because they have an Arabic pharmacist who translate and write down everything in Arabic for us [participant and her husband]... I used to collect my medicines from [a name of a pharmacy] on the same road but they were all Indians and I could not ask to talk to them because I don’t speak English.” [Case 403-AR-F-60]

In all the seven pharmacies there was at least one Hindi-speaking pharmacist among the staff. Although there are several languages spoken among the SA population such as Urdu, Gujarati, Bengali, etc., Hindi is commonly understood by all the SA population so accessing a pharmacist who speaks a similar language as the SA group was not an issue for SA patients in this study. However, it was claimed
by an Indian pharmacist in one pharmacy that the unavailability of a Bengali-speaking pharmacist in the pharmacy hindered the ability to conduct MURs for Bangladeshi patients.

**The use of multiple pharmacies**

It seems that ME patients were more likely to report using more than one pharmacy (chi-square test, $P=0.019$) compared to SAs. Eleven (27%) ME participants reported using more than one pharmacy and only six (15%) SA patients reported using more than one pharmacy. The reason for this as reported by participants was more likely to be due to unavailability of a pharmacist or a staff member who speaks the same language. SAs, partly, were more likely to use the same pharmacy, which may make the pharmacy a good place to support wider needs. These points are important for policymakers in considering how to address needs of people newly arrived in the country.

**Access to GPs and other services**

From the data, it seems that patients of ME origin were more likely to voice GP service problems (chi-square, $P=0.023$). There were (21/40, 53%) participants from ME background identified with 48 GP service problems compared to (11/40, 28%) participants from SA origin identified with 18 GP service problems. For example, as a consequence of not being able to book appointments to see GPs, it seems that ME patients were more likely to go for emergency GP consultations (chi-square test, $P=0.000$) and A&E consultations (chi-square test, $P=0.043$) and in some cases to seek help from the private health sector compared to SAs. Eighteen out of 35 (51%) ME participants had one or more emergency consultation(s) whereas only five out of 38 (13%) of SA participants had one or more emergency consultation(s) in the previous five years. Twenty-two out of 37 (60%) ME participants had one or more A&E consultation(s) whereas only five out of 27 (18%) of SA participants had one or more A&E consultation(s) in the previous five years. The following quotes illustrate
the patients’ preferences to go for emergency GP consultations or A&E consultation rather than waiting for regular appointments:

“The problem with my GP is that if you want an appointment, you have to wait for at least two weeks... If I waited for two weeks, I might be recovered before seeing my GP... So I had to ask for emergency appointments or to go to the A&E.” [Case 214-AR-M-45]

“Yes, every day I go to the A&E... For the same reasons: my legs, pain in my stomach and dizziness... I am not happy at all with my GP surgery, appointment is difficult to get, waiting time is long, the time I spend with my doctor is not enough.” [Case 303-AR-F-53]

“Yes, I always go to the A&E when I have asthma attacks. When I have an attack I can’t wait, I need to see a doctor on the same day.” [Case 402-AR-M-65]

A participant went to the private sector because it offered quicker access to specialised care:

“The operation I had in my spinal cord and the consultant I see are all private... I have BUPA private insurance so I can go anywhere I like... If people who live here want to have the same operation done, they have to wait in a queue for at least six months to get an appointment for the operation... For me because of the private insurance I didn’t wait at all... All the process went quickly and smoothly.” [Case 314-AR-M-61]

**The extent of family support/help with medicines reported by participants**

According to the data, ME patients (29/40, 73%) reported receiving more help with medicines (chi-square test, \( P=0.000 \)) compared to SAs (10/40, 25%). The most commonly reported extent of support in both groups was with ordering and collecting prescription medicines followed by obtaining and reading information as well as giving advice on medicines. Six out of 10 SA participants reported receiving help from a family member with obtaining and reading information as well as giving advice on medicines. All those who reported such support were illiterate in their own language and had no or limited English skills. In contrast, 14 out of 29 ME
participants reported receiving help from a family member with obtaining and reading information as well as giving advice on medicines. The majority (9/14) of them had no university education and one had no education at all and four had university or above qualification. All reported having limited English proficiency, except three participants who had university or above qualification. Based on these findings, it seems that SA and ME patients were more likely to involve their families in obtaining and reading information as well as giving advice on medicines if patients were illiterate in their own language and had no formal education at all. The rest of the illiterate participants from both ethnicities (9/16) reported that they get information and advice from a doctor who speaks their native language and thus there was no need for family involvement in providing advice and obtaining information.

Medication-taking behaviour

ME participants were more likely to choose not to take their medicines as advised compared to SAs (chi-square, \( P=0.000 \)). There were (31/40, 78%) participants from ME background who were identified with a range of intentional non-compliance problems (n=65). There were (12/40, 30%) SA participants identified with 19 intentional non-compliance problems. Based on the findings, no obvious differences were found between SA and ME groups to explain the reasons why ME participants were more likely to choose not to take their medicines as advised compared to SAs.

Key messages from Chapter 7

- It is important to understand diversity among SA and ME groups. This chapter has shown that each ethnic group might have its own distinct characteristics, problems and needs. Therefore, care and treatment for all needs to be culturally sensitive and delivered according to the individual’s wishes.
Chapter 8 The adaptations made to the original MRPs questionnaire and coding frame for the use of SA and ME groups

Introduction

This chapter provides a brief overview of the original MRPs questionnaire constructed and validated by Gordon (Gordon et al., 2005); more detailed information on the tool can be found in Chapter 3. This chapter also illustrates our findings in relation to each part of the tool in order to identify what additional issues were discovered among SA and ME groups which would not be captured by the original MRPs questionnaire. The purpose of this was to make recommendations for the tool (section 8.1) to be valuable for use in these populations and to offer recommendations for the coding frame (section 8.2).

8.1 Description of Gordon’s MRPs questionnaire and recommendations that should be made to the original questionnaire for the use of SA and ME groups

Gordon’s tool was designed to identify patients who are experiencing MRPs. A literature review was undertaken to identify the range of problems associated with using medicines and to develop the MRPs tool. A broad definition of MRPs, “any problem experienced by a patient that may impact on their ability to manage or take their medicines effectively” (Gordon et al., 2005), was employed by Gordon to enable her to detect a wide range of problems. The screening tool was designed as a semi-structured interview, which consists of closed and open questions with probes. It identifies whether from a patient’s perspective or beliefs they have some MRPs (Gordon et al., 2005).

The tool provides a structured framework in which quantitative data can be obtained such as patients’ characteristics, number of hospital admissions, consultations as an outpatient or with a private healthcare professional. It seeks to explore factors and events leading to MRPs from the patient’s perspective. It was
validated among patients prescribed a cardiovascular medicine, who were aged over 18 and were from White or Black ethnic origin in areas of London. Gordon validated the tool by collecting additional qualitative data from the home interviews to see if the tool identified patients with MRPs. The MRPs screening tool is divided into five sections which involve questions regarding patients’ medicines, the illnesses for which they take their medicines, medications use, service access and background information on participants (Gordon et al., 2005):

Section 1 (About your medicines)

Participants were asked in this section to recall the names, doses, dosing frequencies and purposes for which they used their prescribed and non-prescribed medicines. The question aimed to obtain information on what patients were taking to gain insight into patients’ knowledge of their medicines and to provide a basis for subsequent questions. This was cross-checked with pharmacy records. This also provided data to indicate any potential duplication of medicines, drug-drug interaction, under-dose and over-dose. The following problems emerged at this stage: lack of information on medicines, interactions, non-compliance, and problems with non-prescription medicines. The question asked:

Q3. Can you tell me the names of the prescription medicines you take or use? If you are unable to tell me any names, please describe them to me. About each medicine: How many/much and how often do you take/use each day? Do you know what you are taking/using this medicine for? For how long have you been taking/using this medicine? What other medicines do you take or use? About each medicine: What is the name of the medicine? What are you using this medicine for? How often do you use this medicine?

Participants were afterwards asked to report if they received help with their medicines to describe the nature of the help received. The question asked:

Q4. Does anyone help you with your medicines? Who is this person? How does this person help you? How often does this person help you?

In Gordon et al.’s study (2005) only 19% (49/259) reported receiving help with medicines, mainly from family members. The nature of help was limited to
collecting prescriptions and dispensed medicines, reminding participants to take medicines and administering medicines to participants. However, our findings showed that almost half (49%) of interview participants reported that they received help with medicines. The help received was mainly from a family member and was regular (i.e., daily, weekly, fortnight or monthly). The extent of support revealed by participants was different, ranging from undertaking one activity to being responsible for all aspects of medicine management.

Altered medication-taking behaviour was voiced by some participants in the present study as a consequence of family support. For instance, some participants received advice from their relatives to stop taking their medicines because their families perceived the harm of the medication in general to exceed the perceived benefit. Prescription medication borrowing and sharing among family members was also described. For example, an Indian woman came to the pharmacy to ask for a further supply of Omeprazole tablets. The pharmacist told her that she had already been provided with a supply of Omeprazole but she claimed that she had run out because she was sharing this medicine with her father who was already prescribed Ranitidine (dual therapy).

Our findings indicated that family support is a clearly important issue in SA and ME populations. These families tend to play a considerable role in all aspects of patients’ medicine management which sometimes affected patients’ medication-taking behaviour and safety. Therefore, in order to identify different issues in SAs’ and MEs’ family support and to be sure to establish all relevant information, additional prompts could be listed under this question. Prompts could be as follows: collecting prescriptions from GP surgery or medicines from pharmacy, buying non-prescription medicine, reminding you to take your medicines, opening containers or pulling out tablets, administration, understanding or reading information, obtaining information, advice on medicines, and other, please describe. These prompts will enable us to identify in what way these patients have been supported (i.e., type of support they receive, by whom and how often, what patients say about the help
they get and how helpful it is). This may be effective in showing how carers and participants divide tasks and share responsibilities. This may also help in optimising medicine use, improving health outcomes and medicine management, and preventing any possible MRPs that may occur due to involving carers in patients’ care.

Section 2 (About yourself)

In the original tool, this section includes questions on characteristics of participants (e.g., age, gender, country of birth, ethnic group, and whether or not they live alone). The questions asked:

Q5. May I ask how old you are?
Q6. Where is your country of birth? In which year did you come to the UK? Which ethnic group do you consider yourself to belong to?
Q7. Do you live alone or with others?

Additional patient characteristics such as main language, ability to speak English, year of arrival in the UK, religion, qualification and current employment status were collected in the present study to describe the population further. This may also enrich the data by including the experiences and views of participants from different characteristics. Another reason for gathering this additional information was because people of different characteristics have been found to differ in their beliefs about health and medicines, medicine-taking behaviour and service use. For example, language barrier was voiced to be an issue in accessing healthcare services, reading and obtaining information by many participants who reported having limited English proficiency. A further example is that some Muslim participants pointed out that while fasting they adapted their use of medicines in different ways. Therefore, it is recommended that additional patients’ characteristics which appear to be important to SA and ME groups should be gathered.

It is also advised that in the participants’ characteristics section the question regarding country of birth should be changed to include only ‘the UK’ or ‘other’.
Ethnic origin question should be modified to involve only people from ‘South Asian’ or ‘Middle Eastern’ background. Research participants’ characteristic details should be moved from section 2 (at the beginning) in the original tool to a separate sheet in the adapted version and the details of participants should be taken at the end of the interview. This would allow the researcher to collect the most important information and data regarding medicine use and service access at the beginning of the interview for participants who may not complete the interview.

Section 3 (About the illnesses for which you take your medicines)

This section illustrates the number of hospital admissions including accident and emergency, and consultations as an outpatient or with private healthcare professionals in the past five years. The question asked:

Q8. About the illnesses for which you take your medicines, in the past 5 year have you:

a. Been admitted to a hospital? Yes/No.
b. Attended or been taken to A&E/casualty? Yes/No.
c. Called a GP as an emergency outside surgery hours (i.e., evening or weekends)? Yes/No.
d. Called a GP or made an appointment as an emergency during surgery hours (i.e., daytime)? Yes/No.
If yes, please tell me: Which year and month? For what reason? More about this.
Do you:
e. Attend hospital as an outpatient? Yes/No.
f. See any other person privately for your health? Yes/No.
If yes, please tell me: Who you see? For what reason? How often? The last time you attended.

The majority of participants in Gordon et al.’s study (2005) reported having no hospital admissions (149/250, 60%) or A&E consultations (164/251, 65%) in the past five years whereas in our study the majority of participants reported having one or more hospital admission(s) (n=43/78, 55%) or one or more A&E consultation(s) (39/76, 51%) in the past five years. The high use of hospital and A&E services among SA and ME groups might show poor access to primary care and might indicate that they have problems in understanding how healthcare works and how to navigate
their way around the primary care system. This question highlights differences in service use between these groups. It may reflect perceived access to care, and therefore it may reflect people finding out more about their medicines. This question can be extended to gather further information about problems in access that may impact on medication-related problems.

Section 4 (More about your medicine)

This section measures self-reporting non-compliance with prescription medicines and demonstrates the nature and frequency of patients’ non-compliance. Information was collected in this section on participants’ perspectives of their medicine-taking behaviour.

Q9. Some people do not always take their medicines according to the instructions, but adjust the dose according to what they think they need. Do you do this? Tell me more about this?
People sometimes forget to take their medicines. Do you do this? Tell me more about this?
What problems have you experienced with taking your medicines?
What would you do if you had a problem with taking your medicines?

Various reasons were given by SA and ME patients for non-compliance with medications. Some reasons were very similar to the ones identified in Gordon’s study and other studies but others were reported to be specific to SA and ME groups such as religious practices and beliefs, cultural and social issues, language and communication barriers, etc. These reasons that are important to SA and ME individuals may not be captured using Gordon’s original tool. They were only captured when specific prompts about cultural, social and religious beliefs were introduced into Gordon’s tool. Therefore, it is recommended that, after asking closed and open questions in the original tool regarding non-compliance, prompts should be given to patients to capture reasons that are important to SA and ME groups such as Ramadan, sharing or lending medicines, advice from family or friends, use of OTC or herbal remedies, travelling abroad back to their homeland or
to take religious journeys, others please specify. Patients should also be asked to report the medicine and how they had changed their prescribed regimen.

By using this method, more reasons which were reported to be particular to SA and ME groups can be examined as to why patients adjusted their prescribed regimens. The open question can be asked at the beginning in order to allow respondents to say what is really on their minds without being influenced by suggestions from the researcher and after that prompts can be given to throw light on reasons for non-compliance that are particular to these populations which may not be captured by open questions.

Section 5 (About you GP surgery and pharmacy visits)

This section gives details relating to contacts with, and consultations at, the pharmacy and surgery. Participants were asked about the frequency of their consultations at the GP surgery (with a GP or practice nurse). They were asked in this section to report how often they obtained their repeat prescriptions. Their purposes for consulting the pharmacist and a question on whether they have ever run out of supplies of medicines were also included. A final question in this section was about patients’ sources of information on medicines and illnesses. At the end of the questionnaire, participants were given the opportunity to add additional comment on medicine- or service-related issues that were not covered during the interview. The following problems emerged at this stage: lack of information or discussion, problems with repeat prescription, problems with interface, monitoring and review, and GP surgery and pharmacy service problems. The questions asked:

*About your GP surgery and pharmacy visits*

Q10. How often do you usually consult / see your GP about your illnesses and regular medicines?

Do you usually consult / see any other person employed at the surgery about your illnesses and regular medicines? Yes/ No. If yes, please tell me: who you see? For what reason? How often?

How well does this arrangement at your surgery suit you?

When was the last time you consulted / saw your GP or anyone else employed at the surgery about your illnesses or regular medicines?
Chapter 8 – Results (The adaptations made to the original MRPs questionnaire and coding frame for the use of SA and ME groups)

Q11. How do you usually get your prescriptions from your GP surgery? How often do you usually get prescriptions for your regular medicines?
Q12. You ever delayed taking your prescription to the pharmacy, after your supply of medicines has run out? Yes/No. If yes, tell me more about this.
Have you ever talked to your pharmacist/chemist about any matters? Yes/No. If yes, please tell me what matters.
Q13. What do you think about the information you are given on your medicines? Do you have enough information or would you like more? Enough/More. If more, what suggestions do you have to improve this?
Q14. Are there any further comments about your medicines that you would like to add? Do you have any questions that you would like to ask me?

Some participants in the present study tended to answer ‘it is OK’ to the question ‘How well does this arrangement at your surgery suit you?’ but, when additional prompts were given, participants started to express their opinion and views regarding the difficulties in accessing care. The most commonly reported difficulties from SAs’ and MEs’ perspectives included making appointment, waiting time, length of consultation, seeing the same GP and relationship with the GP. Other reported difficulties were particular to SA and ME groups such as seeing a GP from the same gender, language barrier and absence of an interpreter. Therefore, it is highly advised that, after asking the open question ‘How well does this arrangement at your surgery suit you?’, additional prompts might be provided such as making an appointment, waiting time, seeing the same GP, seeing a GP of the same gender, length of consultation, language and interpretation, relationship with GP, other please describe.

The advantage of the open question is to allow respondents to express their views fully concerning the question, and the advantage of providing prompts afterward is to invite respondents to enter their thoughts on a specific matter that they may not remember or may not consider as a potential issue. Providing additional prompts will also enable us to capture the problems that are likely to face ME and SA participants in particular in accessing healthcare services. Careful attention must be taken not to ask leading questions when prompting the question.
Chapter 8 – Results (The adaptations made to the original MRPs questionnaire and coding frame for the use of SA and ME groups)

It is also recommended that two questions should be added to this section; these are:

Q. How well does the service at your local pharmacy works for you?“
Have you ever had an MUR?
Yes/No. If yes, please tell me more about your experience? (Prompts: purpose of the MUR, perceptions on the benefit and usefulness of MUR, affected knowledge or use of medicines, likes and dislikes about MUR, how to improve the service)
Q. Is there anything you think that your doctor, pharmacist or nurse could do more to help you better manage your medicines?“.

The first question will elicit responses describing patients’ perceptions of pharmacists’ role and pharmacy services to suggest recommendations on how pharmacy services should be developed and what services need to be implemented in order to address the needs of these populations. Such responses can describe patients’ perspective of pharmacy services and the value that they derive from them and show how these services are being contextualised with patients’ life world. Questions about advance services such as medicines use review (MUR), which is available now in pharmacies, can be included. These questions might help in identifying problems and addressing different issues such as patients’ lack of knowledge and understanding, and inappropriate use of medicines. The revised tool could be used as an instrument in the MURs.

The second question should be added in order to obtain recommendations from patients’ perspectives to support them in their use of medicines and access to services and to make them more involved in their own care. This is important to develop services which are better tailored to patients’ needs.

8.2 Differences in the types of MRPs identified between the present study and Gordon et al.’s studies, and the recommendations for the coding frame

This section (8.2) aims to describe systematic differences in the types of MRPs identified between the present study and Gordon et al.’s studies in order to develop a revised coding frame (Gordon et al., 2005; Gordon et al., 2007). In order to do this
the data from MRPs face-to-face semi-structured interviews and the pharmacies’ review were coded in accordance with Gordon’s coding frame. When a new problem, sub-code or sub-theme emerged from a participant’s discussion and was not included in Gordon’s coding frame, it was added to the most appropriate category or theme in Gordon’s coding frame. Any theme that did not fit a pattern in the coding frame was analysed separately. Gordon’s coding frame consisted of nine main broad themes plus a number of sub-themes under each main theme. The nine broad categories comprise:

**ADRs and DIs**

An ADR was defined as type A (side effect) or B (hypersensitivity). If a participant reported a reaction or a symptom that was actually or potentially related to a drug, this was considered as an ADR. A drug interaction was defined as a symptom or pharmacological response related to a combination of medicines (Gordon et al., 2005). The original MRPs categorisation sheet has six sub-categories (sub-themes) under problems with ADRs and DIs, as illustrated below; in the present study no data were captured for problems related to ‘drug-disease interaction’, ‘drug-laboratory test interaction’ and ‘drug-food interaction’ because the researcher could not access patient medical records in GPs’ surgeries in order to identify such problems. In terms of recommendations, access to the patients’ medical notes, full record of prescriptions, non-drug care and results from laboratory tests, which are only available at GP surgeries, is required in order for these problems to be identified.

1 **ADR and DIs**
   - Type A ADR – side effect known
   - Type B ADR – hypersensitivity
   - Drug-drug interaction
   - Drug-disease interaction
   - Drug-laboratory test interaction
   - Drug-food interaction
Intentional non-compliance

Intentional non-compliance was looking at patients actively making decisions about how to use their medicines. Gordon’s original MRPs categorisation sheet had 12 sub-categories under the problems with intentional non-compliance category. All these sub-categories were coded under intentional non-compliance but some would not be considered as intentional non-compliance, such as ‘incorrect order of using inhaler’.

From the original coding frame, no data were captured for problems related to ‘mixing different preparations in the same container’, ‘use of expired medicines’, ‘inappropriate storage of medicine’, ‘use of POMs discontinued by GP’, ‘duplication of POMs’, ‘unsure of correct medicine to take’, or ‘incorrect order of using inhaler’. This was because patients were not interviewed with their medicines present. Thus, it is recommended that patients should be interviewed with their medicines present in order for these problems to be identified. Interviewing patients in their homes, for example, can establish exactly what medicines the patients are actually taking, how they use their medicines and how they store their medicines.

Four additional issues were identified in the present study under this category and subsequently were added as sub-categories. They were ‘problems with dosage form’, ‘taking daily doses all together at once when should be daily divided dose’, ‘taking medicine at the wrong time’, ‘taking someone’s else prescription medication’. The new sub-categories are highlighted in red below and written in an Italic style and it is advised that they are included in the revised coding frame.

2 Intentional non-compliance
Under-use of POMs
Over-use of POMs
Duplication of POMs
Mixing different preparations in the same container
Use of expired medicines
Inappropriate storage of medicine
Unsure of dosing
Stopped taking medicines
Split dose when should be one dose
Unsure of correct medicine to take
Use of POMs discontinued by GP
Incorrect order of using inhaler

**Problems with dosage form**
- **Taking daily doses all together at once when should be daily divided dose**
- **Taking medicine at the wrong time**
- **Taking someone’s else prescription medication**

**Cognitive, physical and sensory problems**

Cognitive, physical and sensory problems were defined as any personal difficulties that may have led to participants managing their medicines ineffectively, such as dexterity, visual, hearing and cognitive problems (Gordon et al., 2005). Gordon’s MRPs categorisation sheet has four sub-categories under the cognitive, physical and sensory problems category. One additional problem ‘Difficulty swallowing’, which was reported in the present study, was highlighted in red and added as a sub-category to category number 3.

**3 Cognitive, physical and sensory problems**
- Forgetting to take medicines
- Difficulty opening containers/packs
- Difficulty reading labels
- Difficulty hearing instructions
- **Difficulty swallowing**

**Problems with non-prescription medicines**

Problems with a non-prescription medicine were defined as any issues with non-prescription medicines that are bought by the patient, such as OTC and homeopathic medicines (Gordon et al., 2005). Four sub-categories were under ‘problems with non-prescription medicines’ category. From the categorisation sheet, no data were captured for problems related to ‘use of expired medicines’ because this study was not conducted in patients’ homes to see whether they used expired medicines or not. One additional problem was identified in this category and subsequently was added as a sub-category to category number 4. ‘Uncertainty
about the indication for the drug’ was included since a few participants used non-prescription medicines without knowing their indications.

4 Problems with non-prescription medicines

- Over-use
- Interaction with POMs
- Contra-indication
- Use of expired medicines

*Uncertainty about the indication for the drug*

Drug-prescribing problems

Drug-prescribing problems were any problems identified by the researcher or reported by the participant relating to the prescribing of their drugs, for instance therapeutic duplication or prescribing of an inappropriate dose or medicine (Gordon et al., 2005). Gordon’s MRPs categorisation sheet has seven sub-categories under the drug-prescribing problems category. From the categorisation sheet, no data were captured for problems related to ‘No directions given for medicine’. This was identified as a problem in Gordon et al.’s study (2007) when no label or directions were found on the medicine. This was not possible to be assessed in this study because no home visits were made to see whether there were directions written on medicine or not.

5 Drug-prescribing problems

- Drug missing from regime
- Therapeutic duplication
- Use of drug to treat adverse effect of another
- Inappropriate dose (too high or low)
- Drug should not be in the regime
- Inappropriate length of treatment
- No directions given for medicine

Interface, monitoring and review problems

Any problem reported by the participant about the lack of review or monitoring of medicines and illnesses was considered as an MRP. Additionally, the researcher assessed the frequency of patient consultations at the GP surgery using the following criterion: any report of less than one annual consultation with a GP or
nurse was considered insufficient. Any problem associated with the prescribing of medicines between hospitals and GPs were included in this category. These problems involved, for instance, prescribing problems resulting from a discharge from a hospital stay or those resulting from the lack of information supplied to a GP for an outpatient under the care of a hospital consultant (Gordon et al., 2005). No changes were made to this section.

6 Interface, monitoring and review
   Inadequate monitoring or review
   Inadequate transfer of information from hospital to GP

Problems with lack of information or discussion

Any problem identified by the researcher or reported by the participants about the lack of information provided or the lack of discussion from a HCP regarding medicines or illnesses was classified as a problem in this category (Gordon et al., 2005). Gordon’s MRPs categorisation sheet has 3 sub-categories under the problems with lack of information or discussion category. The sub-category for problem related to ‘Inadequate discussion with doctors/nurses/pharmacists/hospital staff’ in category number 7 was renamed ‘short length of consultation’ and added to category number 9 to give a better indication and description of the problem.

7 Lack of information or discussion
   Inadequate information on medicines
   Inadequate information on illness
   Inadequate discussion with doctors/nurses/pharmacists/hospital staff

Problems with repeat prescription

Problems with the process for obtaining repeat prescriptions through the surgery or the pharmacy: a repeat prescription service allows a patient to obtain a further prescription without consulting a GP. Any problem that was associated with the repeat prescribing process and medicine ordering from the GP was categorised as a repeat prescribing problem (Gordon et al., 2005). Gordon’s MRPs categorisation
Chapter 8 – Results (The adaptations made to the original MRPs questionnaire and coding frame for the use of SA and ME groups)

Sheet has five sub-categories under the problems with repeat prescriptions category. From the categorisation sheet, no data were captured for problems related to ‘over-ordering and stored at home (hoarding)’ and ‘renew once only medicine’. This is because, in order for these subcategories to be identified, patients should be interviewed with their medicines present such as conducting home interviews rather than pharmacy interviews.

8 Problems with repeat prescriptions
Over-ordering and stored at home (hoarding)
Ran out of medicine and did not order anymore
Medicines no longer used remain on form
Renew once only medicine
Delay renewals after supplies run out
Order repeat POMs for another person

GP surgery and pharmacy service problems

This category was defined as any problems with services from the surgery or the pharmacy perceived by participants (Gordon et al., 2005). Gordon’s MRPs categorisation sheet has 10 sub-categories under the GP surgery and pharmacy service problems category. From the categorisation sheet, no data were captured for problems related to ‘lack of synchronisation of pharmacy and GP surgery opening and closing times’. Five additional problems were identified in the current study and subsequently were highlighted in red and added as sub-categories to category number 9. They included ‘difficulty consulting a GP from the same gender’, ‘problem with communication, language and translation’, ‘the short length of consultation’, ‘lack of referrals’ and ‘the attitude of GP staff’.

9 GP surgery and pharmacy service problems
Difficulty getting appointments to see GP
Difficulty consulting the practice nurse
Difficulty consulting the pharmacist
Long waiting time in GP’s surgery
Difficulty consulting the same GP
Difficulty consulting a GP from the same gender
The short length of consultation
Chapter 8 – Results (The adaptations made to the original MRPs questionnaire and coding frame for the use of SA and ME groups)

Problems with pharmacy supplying medicines from various manufacturers
Pharmacy never has complete stock
No information leaflet supplied from pharmacy

*Lack of referrals*
Lack of emergency home visits

*The attitude of GP staff*

*Problem with communication, language and translation*
Lack of emergency home visits
Lack of synchronisation of pharmacy and GP surgery opening and closing times

**Key messages from Chapter 8**

- In summary, Gordon’s MRPs tool (2005) was adapted by the researcher with minor modifications mainly to capture the experiences and views of SA and ME patients regarding use of medicine and access to services and to address reasons that may lead to MRPs which are specific to these groups. The principal changes were in describing the extent of support provided to patients by their families (section 1), adding additional patients’ characteristics (section 2), providing additional prompts to capture the reasons for intentional non-compliance that are important to SA and ME groups (section 3), presenting additional prompts to capture the problems that are likely to face ME and SA groups in accessing healthcare services (section 5), describing patients’ perception of pharmacists’ role, pharmacy services and MUR service (section 5), and, finally, asking for recommendations or advice from patients in order to provide care that is better tailored to their needs. The revised version of this tool could be used as an instrument in the MUR for these patients to detect MRPs.

- In terms of recommendation for the coding frame, no changes should be made to the original coding frame apart from adding 11 new sub-categories that were identified in the current study. It is also recommended to review patients’ records in GP surgeries and pharmacies and to conduct home interviews in order to be able to identify a wide range of MRPs that are included in the coding frame.
Chapter 9 – Results (The perspectives of pharmacists on MRPs identified and recommendations made by the researcher)

Chapter 9  The perspectives of pharmacists on MRPs identified and recommendations made by the researcher

Introduction

This chapter concludes the results section by examining the perspectives of pharmacists on the MRPs identified and recommendations made to address medicine-related problems among SA and ME groups. A regular pharmacist from each pharmacy (n=7) was asked by the researcher to be interviewed for approximately ten minutes on the telephone. Pharmacists were asked to discuss what their experiences and views were regarding MRPs for these populations. This was done to confirm the presence of MRPs or refute them or discover new issues. They were also asked to highlight recommendations on how these problems might be addressed. The main purpose of this chapter was to validate the MRPs identified in the current study and to test the recommendation made.

9.1  The perspectives of pharmacists on issues specific to SA and ME groups that influenced adherence and informed decision making

Seven pharmacists were approached; six agreed to take part. The response rate was 86% (6/7). One pharmacist could not take part because she was on maternity leave. An interview schedule was developed by the researcher from the issues that were raised in the semi-structured interviews and were reported to be specific to SA and ME groups with regard to religious practices and beliefs, extent of family support, travelling abroad back to their homeland or to take religious journeys. Perceptions of healthcare providers, difficulty consulting a doctor from the same gender, lack of referrals to specialised care, language and communication barriers were also included. Statements were developed to represent these issues and to assess their relevance to SA and ME participants from pharmacists’ perspectives. Table 9-1 shows these statements.
Table 9-1: Statements developed based on semi-structured data used in the MRPs questionnaire.

<table>
<thead>
<tr>
<th>Items developed based on semi-structured interview findings</th>
<th>1=Yes, in the last week</th>
<th>2=Yes, in the last month</th>
<th>3=Yes, in the last year</th>
<th>4=Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Altering mediation-taking behaviours due to religious practices and beliefs (e.g., Ramadan and fasting and submission to God’s will in coping with illness and taking medicines).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2) Altering medication-taking behaviours due to family support (e.g., giving advice on medicines, buying non-prescription medicines, obtaining information, understanding or reading information, borrowing and sharing medicines).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) Altering medication-taking behaviours, getting medicines without a prescription, and/or receiving conflicting advice from a HCP when travelling abroad back to their home land or to take religious journeys.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4) Altering medication-taking behaviours due to perceptions of healthcare providers (e.g., lack of trust or bad relationship).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(5) Difficulty consulting a doctor from the same gender.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(6) Lack of referrals to specialised care.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(7) Language and communication barriers.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Pharmacists were asked to rate their responses to each statement from 1-7 on a four-point Likert scale (1= Yes in the last week, 2= Yes in the last month, 3= Yes in the last year, and 4= Never). The frequency of responses to issues raised in the semi-structured interviews was assessed by the community pharmacists to check whether they were relevant to SA and ME participants by examining whether the community pharmacists experienced any of these issues with their SA and ME customers. Figure 9-1 illustrates percentages of pharmacists’ responses to issues raised in semi-structured interviews.
All the pharmacists (6/6, 100%) agreed that SA and ME Muslim patients alter their medication-taking behaviours in Ramadan in different ways. They all reported experiencing this in the last year. The following quote illustrated this:

“Nearer to Ramadan time mainly I experience those kind of erm... People coming in and when I question them or ask to do an MUR or something like that... I find out that they are not taking it or they do not know what to do... Like which medicine to take at what time... and some people just stop it... I’ve had that issue, yeah... Especially I am worried about the diabetics in this area and in Ramadan time they just change the dose totally.” [Ph1-IN-M]

Nearly two-thirds (67%) of pharmacists responded with ‘Yes, in the last year’ to the question ‘Have you encountered SA and ME patients altering their medication-taking behaviours due to family support?’ Pharmacists reported that they have seen family members giving patients advice on medicines; buying non-prescription medicines for them; obtaining, understanding or reading information for patients; or borrowing and sharing medicines among each other, as indicated in the following quotes:
“We had lots of people coming in and buying things for their families – over-the-counter medications. I also had prescription medicines taken which is not totally understood.” [Ph1-IN-M]

“I have come across many instances where people shared their medications and received advice from their family or friends.” [Ph3-IN-M]

“Oh, yeah, it is very common... I found a lot of people coming and say ‘Oh like erm... my sister had this and then I tried it on and it worked.’” [Ph7-IN-F]

As for the issue of ‘altering medication-taking behaviours, getting medicines without a prescription, and/or receiving conflicting advice from a HCP when travelling abroad back to their home land or to take religious journeys’, nearly two-thirds (67%) of pharmacists responded by saying that they have experienced this issue among their SA and ME customers in the last year. Typical comments included:

“Receiving conflicting advice does happen... I have experienced this as well from patients who have come with certain kind of belief in taking certain medications in a certain way... and then you find out [and say] ‘No, no, no, this is a wrong advice’ and then they can get confused because I am giving them different advice from the place where they come from. Getting medicines from their homelands – that is happen as well because they have been prescribed medication from that country and they come here and been given different brand name but then we check it for them to find what it is and we find out the generic and we find out that there could be a problem with what they are taking in this country... I mean their regular medicines in this country.” [Ph1-IN-M]

“I’ve seen people buying medicines abroad, absolutely not the right medicines, but they buy it by their will and they come here and sometimes you could be shocked why they are using these sorts of medicines.” [Ph3-IN-M]

“Experience it in a sense that they do tell us when they go to their home lands; they feel much better and sometimes they say they don’t need to take their medicines.” [Ph6-IN-M]
Half (50%) of pharmacists reported that they have experienced in the last year SA or ME patients altering their medication-taking behaviours due to perceptions of healthcare providers either due to lack of trust or bad relationship. However, about a third (33%) of pharmacists reported that they have never experienced this issue among their patients.

With regard to the statement ‘difficulty consulting a doctor from the same gender’, half of pharmacists (50%) have experienced this among their customers in the last year. However, about a third (33%) of pharmacists revealed that they have never encountered this problem among their customers. The following quotes illustrated this issue:

“Mainly female patients but actually no, no, male patients as well I would say... Certain male patients they have got things that are a bit personal to them and they are reluctant to see other gender GP.” [Ph1-IN-M]

“I will not name the centre but it is a diabetic centre. Obviously female patients want to see a female doctor... They should provide this facility.” [Ph3-IN-M]

Half (50%) of pharmacists responded with ‘Yes, in the last year’ and half (50%) responded with “Yes, in the last month” to the statement ‘Have you ever experienced patients reporting lack of referrals to specialised care?’

“That is very often happen [laughs]... Happens almost every month I would say... Every month I have somebody like that coming in to say that they have had a problem for a long time and they would be better if they had been seen by a specialist in that field... Or maybe I would advise them to see a specialist in the field because they have been suffering from something so long and I ask them ‘Have you seen anybody else other than the GP?’ and they have not... Many of them have not seen anybody else and I say ‘Why not?’ They just say that they keep asking their GP and their GP is just keep giving repeat medications and keep telling them to do what they are doing and that is it.” [Ph1-IN-M]
As for the ‘Language and communication barriers’, half (50%) of pharmacists revealed experiencing this issue among their SA and ME customers in the last month and about a third (33%) in the last week. Typical comments were:

“I actually had a GP consulting me because he knows we [pharmacy staff] talk certain languages so they actually phoned me to talk to a patient [laughs] and sort of translated the problem over... We are stuck sometimes when it comes to certain African languages which we don’t speak.” [Ph1-IN-M]

“The biggest problem is the lack of communication which is language related... We notice that here [in the pharmacy]. Sometimes, we have to be very careful when we shout out a patient’s name to give him his medicines... Supposing that we have two Ali’s or two Muhammed’s in the pharmacy and they both say ‘Yes’ when we shout their names and we have to try to find out who is who, and when there is a language barrier, they both say ‘Yes’ to everything and it does not help.” [Ph3-IN-M]

In summary, the majority of pharmacists (4/6, 67%) revealed that they have experienced all the issues that were reported to be specific to SA and ME groups among their customers. The problem that was seen more frequently (i.e., weekly or monthly) was language and communication barrier followed by lack of referral to specialised care.

### 9.2 The perspectives of pharmacists on recommendations made to support SA and ME groups in their use of medicines

A part from the issues that were reported to be specific to SA and ME groups, the interview schedule also had recommendations which were made by the researcher based on the issues raised during the interviews to support these groups in their use of medicines. Pharmacists were asked to rate their responses to each recommendation on a Likert scale (1= agree, 2= agree to a certain extent, 3= disagree and 4= uncertain). Table 9-2 shows these recommendation and the responses made by the pharmacists.
Table 9-2: Recommendation made by the researcher and the pharmacists’ responses to these recommendations.

<table>
<thead>
<tr>
<th>Recommendations developed based on interview findings</th>
<th>1= agree</th>
<th>2= agree to a certain extent</th>
<th>3= disagree</th>
<th>4= uncertain</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) These patients have complex needs and co-morbidities. Therefore, they should be a priority group to have an MUR.</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(2) A check list, which involves the issues that were reported to be specific to SA and ME groups, should be included during MUR.</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(3) The pharmacists need to promote themselves more as an information source by increasing prescription medication counselling (e.g., MUR).</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(4) Proper pre-Ramadan and pre-Hajj month education and medical counselling should be encouraged.</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(5) It is important to ask patients during consultation to declare whether they receive help or assistance with their medication and to describe the nature of support provided.</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>(6) Family members should be involved in discussions and decisions about treatment plan of patients. Also, how family members view a medication should become a vital question in practice.</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>(7) The preferred language spoken and read by the patient should be monitored. Where there is a need, letters to patients should be provided in different languages according to their needs and more multilingual staff should be hired in areas which have high percentage of SA and ME groups.</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(8) Improving patients’ language-speaking literacy should be made through the use of audio material such as CDs, or visual materials (e.g., videos, cartoon instructions or pictorial diagrams). If written materials are required, they should use plain language at the fifth-grade level or lower.</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Table 9-2: Continued recommendation made by the researcher and the pharmacists’ responses to these recommendations.

<table>
<thead>
<tr>
<th>Recommendations developed based on interviews findings</th>
<th>1= agree</th>
<th>2= agree to a certain extent</th>
<th>3= disagree</th>
<th>4= uncertain</th>
</tr>
</thead>
<tbody>
<tr>
<td>(9) Adopting a patient-centred approach in delivering care is highly recommended, whereby doctors would involve patients as equal partners in all decisions about their treatment, especially in relation to medication selection and prescription. Eliciting patients’ priorities, identifying their expectations towards illness and its treatment and translating these into realistic objectives for the individual patient should be conducted.</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>(10) Religious, social and cultural beliefs and lifestyle priorities should be addressed and incorporated into patients’ medical records.</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(11) Patients’ information on electronic databases should be accessed and shared among all healthcare providers involved in patients’ care.</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(12) Increase patients’ education through a group session or lecture courses at clinics, GPs, community centres, local masjids and temples or through educational programmes via radio and television should be made.</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(13) HCPs need to be educated in the differences when dealing with a multi-cultural population. They need to be aware of the different social and cultural factors of the ethnic community and how it can influence their attitudes and behaviours towards complying with their medication regimen.</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

The frequency of responses to the recommendation made by the researcher was assessed by the community pharmacists to check whether they can address MRPs among SA and ME groups.
Chapter 9 – Results (The perspectives of pharmacists on MRPs identified and recommendations made by the researcher)

- The pharmacists agreed on almost all the recommendations. However, they had different views regarding recommendations made to support the following: involving family members in patient’s care, adopting patient-centred care, and finally sharing patient information on electronic databases among HCPs involved in patient’s care.

- Two pharmacists agreed that family members should be involved in patient’s care and thought that the elderly patients would benefit most from this involvement:

  “Of course, I think that both you and I came from the same culture, we recognise that [involving family members in patients’ care]... I think we always look after our parents, uncles and aunts... I think it is important because the younger generation is more knowledgeable about things.” [Ph3-IN-M]

  “It depends on the family member I think... If there is, like, an elderly person, then his/her son or daughter should be, like, involved... Because they don't always understand what the doctor is actually saying but if you get like a younger person, then I don't think they, like, [are] able to comprehend... I think it is better to give the patient an option whether he/she prefers it or not... That would be good.” [Ph7-IN-F]

However, two pharmacists disagreed with this statement and another two pharmacists did not feel strongly about this statement, and rated it ‘to a certain extent’ because they believed that this involvement would affect patient confidentiality. They commented that this recommendation would be beneficial to patients only if patients agreed on involving their family members in their own care:

  “There is an issue here because some of them they don't want their family members to know... I would disagree with that... But if they are happy with their family to be involved then yes.” [Ph2-AR-M]

  “Why should we involve family members? Because some people don’t want their family to know what they are taking... But if the patient agreed, then this would be a good idea.” [Ph4-IN-M]
Chapter 9 – Results (The perspectives of pharmacists on MRPs identified and recommendations made by the researcher)

“Involving a family member is beneficial in a sense that if they don’t understand the language. Perhaps, the family members who are a bit coherent, then yes I would say so. But obviously on the other side we have to look at patient’s confidentiality... In that case, perhaps we may not be able to discuss it with family members.” [Ph6-IN-M]

- As for adopting a patient-centred approach in delivering care, one pharmacist disagreed with this statement and believed that all the decisions should be made by HCPs only and not patients:

  “Erm... I don’t think it is a good idea because I think you should leave it to the professionals.” [Ph3-IN-M]

  The remaining pharmacists (n=5) agreed that adopting a patient-centred approach is crucial in delivering high quality of care:

  “Yes, strongly agree because especially in that type of people, they want to have an opinion in what they are treated on so I would definitely involve their views yes.” [Ph2-AR-M]

- Accessing and sharing patients’ information on electronic databases among all healthcare providers involved in patients’ care was agreed among all the pharmacists except one who responded with ‘to a certain extent’. The pharmacists believed that this would be highly beneficial if patients agreed on allowing HCPs who are involved in their care to share the information among each other:

  “It will be highly beneficial to share the information but of course after obtaining patient’s consent.” [Ph2-AR-M]

  “Sharing patients’ information on medical records is a bit difficult again because of patients’ confidentiality... If approved by the patient and the medical professions between themselves then yes... So, it has to be patient-oriented approval.” [Ph6-IN-M]

- As for improving language and illiteracy barriers, all the pharmacists agreed with recommendations number 7 and 8 and they also highlighted other
recommendations on how to improve language barriers for SA and ME groups. They supported hiring multilingual staff, generating labels and written instructions in the patient’s preferred language and providing instructions using graphic symbols for illiterate patients. Providing written information in the most commonly spoken languages in the UK for key drugs and key diseases such as cardiovascular, diabetes, and cancer was recommended. Also, developing a PMR system where pharmacists can print out labels in different languages was seen as helpful. The following quotes illustrate pharmacists’ recommendations on language barriers:

“The good thing we have here is different people talking different languages so we are able to sort this out at least if it comes to language and understanding... Stickers on our labels might help as well... We use stickers on labels which are translated into Bengali language at the moment I have got... Say night, morning, afternoon or something like that of stickers I put on my packaging have helped a lot.” [Ph1-IN-M]

“The main thing is the cultural and language barriers that need to be addressed more... Especially giving information or leaflet that is proper in the language of the patient... This will make it a lot easier... Especially the key drugs and key diseases like cardiovascular, diabetes, or even cancer now... If you have information leaflets targeted to this type of people it will be highly beneficial.” [Ph2-AR-M]

“We start now hiring multilingual staff who speak the languages required for that area... Recently we also started printing labels in Arabic as well... What we could do is to have a multilingual PMR system where it is possible to print labels in any languages patients like... That might help a lot.” [Ph4-IN-M]

“Providing patient information leaflets in different languages would be useful... One of the biggest problems is the language barrier... Recruitment of professionals in areas where they have those communities would be good and it is happening.” [Ph6-IN-M]

“Provide an advice leaflet in different languages before the month of Ramadan or before the Hajj I think is good.” [Ph7-IN-F]
Chapter 9 – Results (The perspectives of pharmacists on MRPs identified and recommendations made by the researcher)

- All the pharmacists supported that SAs and MEs should be priority groups to have an MUR due to their complex needs and co-morbidities. All the pharmacists also agreed that a checklist should be included in the MUR which involves all the issues that were reported to be specific to SA and ME groups. For example, patients should be asked during MUR about their medication-taking behaviour while fasting. Asking patients about medication-taking and obtaining practices while travelling should also be included in MUR, etc. All the pharmacists also agreed that prescription medication counselling and MURs are just as important. A pharmacist commented:

  “MURs should be increased; not only that but I believe that pharmacists should always consult patients no matter what medicines they are taking... That will promote the knowledge that pharmacists do care.” [Ph4-IN-M]

- All the pharmacists agreed with the recommendation “Proper pre-Ramadan and pre-Hajj month education and medical counselling should be encouraged”.

- Addressing and incorporating religious, social and cultural beliefs and lifestyle priorities into patients’ medical records was agreed among all the pharmacists.

- All the pharmacists agreed with the recommendation “Patients’ education should be increased through a group session or lecture courses at clinics, GPs, community centres, local masjids and temples or through educational programmes via radio and television”. Typical comments were:

  “That will help break the barrier between healthcare and the cultural barrier.” [Ph2-AR-M]

“A lot of people do go to community centres, meetings and things so this would be an excellent idea... I know lots of people go regularly to community centres almost every day and they like it... They like listening to this kind of lectures and discussions... You just have to make them
understand from the beginning that there would be no examinations [laughs] and make sure that they understand what it is all about... They just have to sit there and listen and do nothing... Make it clear before the start that this session is going to be about a lecture, you listen to it and you might get some information. If you want to ask questions feel free and if you don’t want to talk, you don’t have to say a word.” [Ph1-IN-M]

“We [pharmacists] are also taking part in the local library down here in a programme called health sessions where people come up to discuss with a health officer if they are diabetics or have health problems... I tried to be there to help them as well.” [Ph4-IN-M]

“Within the community involvement, particularly where they go in groups to meetings or whatever. Perhaps, a professional of any kind – say a pharmacist, or a doctor, or whoever. Perhaps, the HCP can advise them a bit more and give a special talk on different subjects.” [Ph6-IN-M]

As for increasing HCPs’ awareness of the different social, religious and cultural factors of the ethnic community groups and how they can influence their attitudes and behaviours towards complying with their medication regimen, all the pharmacists agreed with this statement; for example:

“Strongly agree because if the pharmacists know these factors, it will make their life easier to communicate and deliver the message they want to different types of patients especially the group you are testing.” [Ph2-AR-M]

In summary, all the pharmacists highlighted recommendations for supporting SA and ME groups in their use of medicines. Responses ranged from prioritising medication use review to SA and ME groups, increasing patient education and counselling, providing verbal and written information in patients’ preferred language and according to their needs and wants, and raising awareness of SA and ME cultures among HCPs.
Key messages from Chapter 9

- This chapter has provided a theoretical framework for MRPs from pharmacists’ perspectives.
- This chapter supports developing MUR further and adding the specific issues that were reported by SA and ME groups to support these groups in their use of medicines.
- The findings also support the development of pharmaceutical care plans specific for SA and ME groups.
- The interviews with the pharmacists confirmed the presence of specific issues among SA and ME groups and highlighted the need to implement changes at primary care and community level, with the aim of addressing MRPs among SA and ME patient and supporting their needs and preferences, such as prioritising medication use review to SA and ME groups, increasing patient education and counselling, providing verbal and written information in patients’ preferred language and according to their needs and wants, and raising awareness of SA and ME cultures among HCPs.
Chapter 10 8-item Modified Morisky Adherence Scale (MMAS)

Introduction

This chapter assesses the extent of non-adherence to medications among SA and ME patients using 8-item MMAS. Participants’ adherence/non-adherence to their medications was assessed using self-report in two ways: using interview data from MRPs questionnaire, and a validated measure for assessing adherence to medications, the Morisky Adherence Scale (MMAS). Assessment of non-adherence based on MMAS was based on the instruction of the scale’s authors, as detailed in the methods chapter, Chapter 3. According to the MMAS scores, participants’ adherence level was categorised as low (if MMAS score < 6), medium (if MMAS score 6 to <8) or high (if MMAS score = 8). The distribution of the 8-item MMAS total score showed that 26 (33%), 27 (34%) and 26 (33%) participants scored 8 (high adherence), 6 to <8 (medium adherence) and <6 (low adherence) respectively. In general, 53 (67%) participants were identified with poor adherence where medium and low adherences were combined.

In addition to specifying the adherence level of participants, where these existed, non-adherence of participants was assessed using the MMAS data in two ways (as in interview data):

Intentional/unintentional non-adherence:

- Unintentional non-adherence by MMAS resulted if participants responded with a ‘yes’ to items 1, 4, or 8, which denoted forgetting medications either generally, in travel or due to finding difficulties in remembering to take all medications.
- Intentional non-adherence by MMAS resulted if participants responded with a ‘yes’ to items 3 or 6, which denoted cutting back or stopping taking medication without telling the doctor because of feeling worse when taking medications or when feeling that illness was under control.

Note: Items 2, 5 and 7 were not used to classify participants as intentional or unintentional non-adherers as the wording of these items hindered this:
• Item 2 (People sometimes miss taking their medications for reasons other than forgetting. Thinking over the past two weeks, were there any days when you did not take your diabetes medicine?)
• Item 5 (Did you take your diabetes medicine yesterday?)
• Item 7 (Taking medication every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your diabetes treatment plan?)

Table 10-1 lists 21 research participants and compares their non-adherence behaviours based on interview data and MMAS responses. It also categorises participants’ non-adherence along the intentional/unintentional dimensions, based on data from both the interview and the MMAS. From Table 10-1 it can be seen that assessing patients’ adherence to their medication is not a straightforward task, as it is difficult to extrapolate a pattern between data from different methods of adherence assessment (i.e., MRPs questionnaire, MMAS), which may provide conflicting classification/categorisation of patients’ non-adherence in relation to these dimensions. There were discrepancies about participants’ non-adherence when different methods of self-report were employed (i.e., MRPs tool and MMAS). What one method suggested was sometimes different to or even conflicting with the other. For instance, based on the MMAS, participant [601-PAK-F-65] was classified as both an intentional and unintentional non-adherer with a score of 3.5, as she admitted sometimes missing taking her medications for reasons other than forgetting in the past two weeks. She also found some difficulty in remembering to take her medications at times. She admitted that she cut back or stopped her medications as a result of feeling worse while taking them. She also reported stopping taking her medicines sometimes when her disease was under control. However, when the MRPs tool was used, the patient was found to be highly adherent to her medications. A possible explanation for that is that when the MRPs questionnaire was administered the patient was asked the questions in English, whereas when the 8-item MMAS was administered, the pharmacist helped the researcher and translated questions into Hindi for the patient, which may improve the patient’s understanding of the questions.
Table 10-1: Twenty-one participants’ adherence behaviours based on MRPs interview data and MMAS data.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Adherence level</th>
<th>Intentional or unintentional non-adherence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Based on MRPs questionnaire</td>
<td>Based on MMAS tool</td>
</tr>
<tr>
<td>101-BNG-M-48</td>
<td>High adherence (never, never)</td>
<td>High adherence (8)</td>
</tr>
<tr>
<td>102-PAK-M-65</td>
<td>Not high adherence (never, rarely)</td>
<td>Low adherence (5)</td>
</tr>
<tr>
<td>104-BNG-M-57</td>
<td>High adherence (never, never)</td>
<td>Medium adherence (7.5)</td>
</tr>
<tr>
<td>210-AR-M-55</td>
<td>Not high adherence (never, sometimes)</td>
<td>Medium adherence (6.5)</td>
</tr>
<tr>
<td>211-IN-M-59</td>
<td>Not high adherence (never, rarely)</td>
<td>High adherence (8)</td>
</tr>
<tr>
<td>216-AR-M-50</td>
<td>Not high adherence (sometimes, often)</td>
<td>Low adherence (3.5)</td>
</tr>
<tr>
<td>302-AR-M-83</td>
<td>High adherence (never, never)</td>
<td>High adherence (8)</td>
</tr>
<tr>
<td>303-AR-F-53</td>
<td>Not high adherence (often, very often)</td>
<td>Low adherence (1.25)</td>
</tr>
<tr>
<td>308-AR-F-55</td>
<td>Not high adherence (never, very often)</td>
<td>Medium adherence (6)</td>
</tr>
<tr>
<td>401-AR-F-40</td>
<td>Not high adherence (never, sometimes)</td>
<td>Low adherence (4.5)</td>
</tr>
<tr>
<td>403-AR-F-60</td>
<td>Not high adherence (never, sometimes)</td>
<td>Medium adherence (6.5)</td>
</tr>
<tr>
<td>405-AR-M-64</td>
<td>High adherence (never, never)</td>
<td>High adherence (8)</td>
</tr>
<tr>
<td>501-PAK-M-68</td>
<td>Not high adherence (sometimes, never)</td>
<td>Medium adherence (7)</td>
</tr>
<tr>
<td>505-PAK-M-57</td>
<td>High adherence (never, never)</td>
<td>High adherence (8)</td>
</tr>
<tr>
<td>507-AR-F-39</td>
<td>Not high adherence (often, never)</td>
<td>Low adherence (4)</td>
</tr>
<tr>
<td>601-PAK-F-65</td>
<td>High adherence (never, never)</td>
<td>Low adherence (3.5)</td>
</tr>
<tr>
<td>603-IN-M-51</td>
<td>Not high adherence (never, rarely)</td>
<td>Medium adherence (7)</td>
</tr>
<tr>
<td>605-IN-M-66</td>
<td>Not high adherence (never, rarely)</td>
<td>High adherence (8)</td>
</tr>
<tr>
<td>702-IN-M-57</td>
<td>Not high adherence (never, very often)</td>
<td>Medium adherence (6)</td>
</tr>
<tr>
<td>705-IN-M-64</td>
<td>Not high adherence (never, sometimes)</td>
<td>Low adherence (5.5)</td>
</tr>
<tr>
<td>708-IN-M-65</td>
<td>High adherence (never, never)</td>
<td>High adherence (8)</td>
</tr>
</tbody>
</table>
Even when both MRPs tool data and MMAS data were in agreement with regard to the categorization of patients’ non-adherence into a certain category (e.g., intentional/unintentional), it was noted that sometimes this classification was arrived at using different incidents the patient had in mind when responding to interview questions/MMAS items related to non-adherence. For instance, participant [216-AR-M-50] was classified as both an intentional and unintentional non-adherer combined, based on both MRPs tool and MMAS data. Despite this agreement in classification, based on the MRPs tool data, the patient was classified to be intentionally non-adherent because he had admitted changing the timing of his Simvastatin tablet from evening to morning. He also reported intentionally stopping taking his medicines once or twice a month for three or four days when he was feeling better (‘sometimes’ on the Likert scale). He revealed forgetting to take his medicines once or twice a week (‘often’ on the Likert scale). However, based on MMAS responses, the patient was classified to be intentionally non-adherent because he reported stopping his medications sometimes when he felt better. This might be because the MMAS items did not include anything that would represent the patient’s intentional non-adherent behaviour, so this aspect of non-adherence was not detected using the MMAS.

The cases selected showed that the data from MRPs tool and MMAS were in agreement at detecting intentional, unintentional non-adherence and high adherence. For example, with 14/21 it was possible to detect intentional, unintentional non-adherence and high adherence.

**Summary of measurement of adherence to medications**

Measuring adherence using various patient self-reported methods is not direct and data provided by each method should be interpreted with caution, as different patients were sometimes categorised differently when different methods were employed. Thus, categorisation of patients using one method only may be incomplete, and should be evaluated with reference to the other.
It is worth noting that in the MRPs questionnaire patients were asked to recall their medication-taking behaviour by specifying a certain period of time unlike the 8-item MMAS, which asked patients to recall their medication-taking behaviour in general without specifying a certain period of time. Thus, it was expected that non-adherence data would not be similar using each method and that there will be differences in participants’ answers. There were possible explanations for inconsistency between data from MRPs questionnaire and MMAS:

- Item 2 and item 5 out of the 8-item of the MMAS are the only items that do specify a time period for patients to report their medication-taking behaviour. This might have made it easier for participants to report their behaviour when MMAS was used.
- The MRPs questionnaire seems to be worded in such way to allow detection of the continuous forms of non-adherence where the patients continuously altered their medication use unlike MMAS scale items, which seem to neglect the continuous form of non-adherence and allow only detecting contextual forms of non-adherence.
- Participants were asked about their medication-taking behaviour at two different points of time in the MRPs questionnaire and MMAS. Thus, they may have reported different incidences of non-adherence with different methods of self-report.

It was found that the MRPs questionnaire was better at detecting intentional non-adherence compared to MMAS because MRPs has an open question (i.e., Tell me more about this: what do you mean, the last time, why?) to allow participants to mention all the possible scenarios denoting intentional non-adherence unlike MMAS items that did not cover all possible scenarios indicating intentional non-adherence.

It is best to use two or more methods and compare them to assess non-adherence to medication based on self-report. What is missing from one method might be completed or better explained though the other. For instance, participant 501-PAK-M-68 was found intentionally non-adherent in the MRPs questionnaire but unintentionally non-adherent in MMAS, so the patient is possibly a combined intentional and unintentional non-adherer. However, problems arise when adherence assessment from one method contradicts that of the other. For instance,
participant 601-PAK-F-65 was adherent based on the MRPs questionnaire but non-adherent when MMAS was used, in contrast to participant 605-IN-M-66 who was non-adherent based on the MRPs questionnaire but adherent based on MMAS. As it is more likely that those who report non-adherence to medications are telling the truth compared to those who report adherence, it was decided that wherever participants admitted to committing non-adherence, whether in MRPs questionnaire or MMAS, they would be categorised as non-adherent.

Limitations to use of the MMAS

Several limitations were noted using MMAS in assessing non-adherence to medication in this study:

- MMAS requires literacy. A few participants seemed that they did not understand some of the questions despite different attempts to explain questions clearly. However, they still provided answers to them, which may have biased total scores.
- The wording of questionnaire items may exacerbate this problem. For example, item 1 which measures forgetfulness should not be considered as a good indicator for assessing patient’s cognitive ability because the patient might remember to take his/her medicine but not to take the right dose at the right time. Question number 2 does not indicate clearly the reason(s) for not taking the medicine; for example was not taking the medicine because of intentional reason(s) such as developing side effects or because the medicine has low efficacy or was it because of unintentional reason(s) such as dexterity problems that lead to inability to open medication containers or use devices such as inhalers or injections or because of poor sight, hearing loss and swallowing problems. Question number 3 does not indicate the reason why the patient felt worse – was it because of developing side effects or because the drug was not efficacious and thus the symptoms were not controlled?
- Some items were not easily interpreted by participants or were interpreted differently by different participants, which may have biased total scores. For example some participants provided a ‘Yes’ response to item 1 in particular and they followed by mentioning that this had occurred very rarely. However, other participants provided a ‘No’ answer, and they followed by reporting that this had occurred very rarely because they thought that rarity of such an incident did not mean a ‘Yes’ answer. Thus, a five-point Likert scale may have been more appropriate to address problems like this, and allow for accommodation of the diversity of participants’ behaviours. Similarly, as for item 4, there was a problem of interpretation by different
participants. For instance, some participants responded by a ‘Yes’ but mentioned that they had done so only once, whereas others responded by a ‘Yes’, but mentioned that they did this continuously and on purpose and not because of forgetting. Although these participants responded by ‘Yes’, they were reporting entirely different types of non-adherence behaviour (i.e., unintentional and intentional, and contextual and continuous). As previously mentioned, a five-point Likert scale may have been more appropriate to address problems like this, instead of the rigid Yes/No responses provided by the MMAS.

- Some items were not applicable to some participants but participants still gave responses to them for the sake of completing the questionnaire, which might have introduced bias. Examples of this were items 3 and 4. Item 3 was not applicable for some participants because they once stopped taking their medicines but for reasons other than feeling worse while taking them. However, they still provided a ‘Yes’ answer. Similarly, item 4 was not applicable for some participants who had never travelled abroad since they were diagnosed with their illness. However, they still provided a ‘No’ answer.

- The MMAS may over-estimate some of the issues leading to unintentional non-adherence. For example, 3/8 items are worded to capture whether patients ‘forget’ to take their medicine. However, the MMAS ignored other causes of unintentional non-adherence such as physical problems, poor sight, difficulty swallowing and lack of awareness which might interfere with medication-taking behaviour. As regards intentional non-adherence, the MMAS items are worded in such a way to allow identification of those who took less of their medications either when feeling that their condition was under control or when feeling worse. These items do not reflect all possible reasons for intentional non-adherence. The MMAS items also neglect those who may take more of their medications for whatever reasons.

- Although the MMAS can detect both intentional and unintentional non-adherence, it is difficult to specify the exact reasons why non-adherence occurred, apart from those that were explicitly mentioned by the items (i.e., forgetfulness, stopping or cutting back on medications because of feeling worse or feeling that diabetes is under control). As far as the continuous/contextual/one-off non-adherence dimension is concerned, the MMAS is not useful at detecting other than the contextual aspect of non-adherence.

- As regards the total score of MMAS, some participants ended up having a medium non-adherence level despite having a nearly perfect score of 7.75 out of 8.00 or ended up having a low non-adherence level despite having nearly medium non-adherence score of 5.75 out of 8.00. Implications of scoring a 0.75 (two decimal places) instead of 1 for item 8 are that these patients ended up having a medium adherence level or low adherence level, just like anyone else who scored low on two different items or low on four different items respectively.
Key messages from Chapter 10

- The present study, provided evidence that SA and ME patients (53/79, 67%) had poor medication adherence using 8-item MMAS.
- In the current study, the MRPs tool as well as 8-item MMAS were both used for the assessment of adherence to medications. Comparison of data from both methods revealed that what one method suggested was sometimes similar or different to or even conflicting with the other. Even sometimes when the two methods agreed, the participants appeared to have different incidents in mind when reporting their non-adherence behaviour using these different methods. This implies that the usefulness of both methods for the assessment of non-adherence to medications is limited when one is used solely. It is therefore recommended that data from one method should be assessed with reference to the other. What is missing from one method can be completed by the other.
Chapter 11  Discussion

This is the first study that has explored and described medicine use and medicine-related problems experienced by SA and ME patients with chronic diseases in primary care in the UK, providing novel evidence that medicine use and service access among these particular populations continues to be problematic across all chronic conditions, which may have life-threatening consequences. Up to date, there have been no studies that included the SA and ME patients’ perspectives on MRPs. The literature search has shown that there has been extensive research on health problems of EMGs, especially access to care, but there has been little research that specifically examines medicine use among SA and ME populations. Also, evidence suggests that medicine-related needs may be poorly met for these groups (Alhomoud et al., 2013).

The current study also highlighted differences between SAs and MEs participating in the study and so far it is the only one to propose a tool that can be used in SA and ME populations to identify MRPs and to detect factors that may contribute to the problems. This research provided important data in this regard which would serve as the basis and frame of reference for future intervention studies aiming to improve medication use and service access among these particular populations.

The extent of non-compliance with medications among SA and ME groups in the UK has also never been estimated before (Ens et al., 2013). So, this study is the first to measure the extent of non-compliance with medication among SA and ME populations in the UK using 8-item MMAS.

This chapter discusses separately: (1) the main key findings on what is new; (2) personal reflections about the research; (3) strengths and limitations of the study; (4) implications of the results for practice and policy; (6) suggestions for future work; and (6) research contributions and how this thesis has contributed to the knowledge and understanding of MRPs among SA and ME patients.
11.1 Main key findings and implications of the results

The current study found that pharmacies located in areas with a high percentage of South Asian and Middle Eastern people were unwilling to participate in the study (non-participation rate 92.5%). Visiting pharmacies in person was the best method of recruitment possibly because this method gave the pharmacists an opportunity to ask more questions about the study and to clarify their roles in it and to examine the face and attitude of the researcher. Thus, in order to facilitate recruitment of community pharmacies for future research, it would be preferable to make in-person visits two weeks after sending invitation letters to the pharmacies and before receiving their response.

The present study showed that SA and ME groups were willing to participate when invited and stayed engaged with the study when the barriers to their participation were appropriately addressed and when given full information about the study (response rate 80%). The reason for the high response rate in the current study was possibly because patients were approached by someone (i.e., pharmacist or researcher) who had the same ethnic background as the patients and spoke the same language. In addition, participants were made aware of the lack of research available in this area and among these patients groups. Finally, the response rate was high because of the greater involvement from pharmacists to approach patients and promote the research in their practice.

This finding supports previous research which showed that the ethnic minority patients are not less likely and are possibly even more likely than the majority population to agree to take part in biomedical research. Wendler and colleagues found that the main obstacle to their participation lay in their reduced likelihood of being invited to take part in the studies. Their systematic review was conducted in more than 90,000 patients offered enrolment in 20 health research studies (Wendler et al., 2006).

Other studies perceived that there was under-representation of ethnic minorities in all therapeutic areas and all types of clinical research. They reported multiple
obstacles influencing the participation of ethnic minority patients. The most important barriers were the fact that some ethnic minorities have greater distrust of the medical system and others had language barriers (Endocrine Society, 2007). Another study, by Hussain-Gambles et al. (2006), suggested that, in addition to the language barriers, other obstacles such as age, gender, social class, feeling of not belonging, and cultural and religious factors are equally likely to affect ethnic minority participation in clinical research. However, patients were motivated to participate in clinical trials that investigated illnesses’ prevalence in their community when they were informed that there was a lack of research available in this group of patients.

Harris and Dyson (2001) suggested different stages to overcome barriers of the recruitment process including approaching patients at a suitable time (e.g., not when they are distressed or in pain), offering an initial description of the study creating opportunities to obtain the patient’s initial thoughts about the study, paying attention to patient’s responses to check the understanding of the study, and providing sufficient time to make a decision. A qualitative study was conducted by Sheikh et al. (2009) investigating the recruitment of South Asian patients in research. They found that the main key issues highlighted for recruitments were language and cultural differences and poor understanding of what research includes (Sheikh et al., 2009).

An implication for this is possibly that researchers should include SA and ME groups more in research, and the research should be designed to identify the MRPs and address the medicine-related needs of these groups from their perspectives. Researchers should also ensure that these groups fully understand what taking part involves and why participation is important, by generating translated materials and using interpreters when needed. The patient being approached in person by a HCP whom the patient knows and/or by a researcher who speaks the same language or is from the same culture might also facilitate recruitment. Making participants aware that there is a lack of research available in this area and among these patient
groups might also increase response rate. Another implication is that the response rate of pharmacies and participants in the current research study could be used to predict the number of pharmacies and participants likely to be recruited in areas with similar characteristics. It could also give an indication of the frequency of patients most likely to be identified with MRPs in other pharmacies with similar characteristics.

Careful attention must be given to the extensive paperwork as it may decrease the response rate by making some patients anxious and reluctant to participate. Although this did not affect patients’ response rate in the current study (80%), some participants did comment on the length of the interview. In addition, for the purpose of qualitative research, digital or tape recording used might be frightening. In this study, a few participants were anxious about digital recording, as they were not sure who would listen to their problems and complaints. However, the researcher reassured them that she would be the only one to listen to their recording. Thus, when doing further research among these ethnic groups, researchers should assure patients of confidentiality of data and explain the purpose of recording besides addressing any concerns to get a good response rate and obtain patients’ honest views.

This study has shown that the definition of MRPs should be wide and not restricted because there are many factors associated with MRPs that need to be considered. The nine categories in Gordon’s coding frame were developed to integrate all types of MRPs reviewed in the literature, which comprised: (1) adverse drug reactions and drug interactions; (2) intentional non-compliance; (3) cognitive, physical and sensory problems; (4) issues with concurrent use of herbal and alternative therapies; (5) problems with drug-prescribing; (6) problems with lack of information; (7) problems with lack of regular monitoring and review; (8) problems with repeat prescriptions; (9) GP surgery and pharmacy service problems.

Interviews revealed that many factors may contribute to altered medication-taking behaviours and informed decision-making among SAs and MEs. Some of these
factors appeared to be specific to these cultures, which included religious practices and beliefs (e.g., fasting and Ramadan, fatalism and submission to God’s will in coping with illness); extent of family support (e.g., advice on medicines, buying non-prescription medicine, understanding or reading information, obtaining information, borrowing and sharing medicines); travelling abroad (e.g., back to their homeland or to take religious journeys such as Hajj or Umrah). Perceptions of healthcare providers (e.g., bad relationship and lack of trust); difficulties related to access and organisation of the healthcare system (e.g., difficulty consulting a GP of the same gender, lack of referrals to specialised care, problem with communication, language and translation, illiteracy); lack of involvement in the treatment decisions; and lack of knowledge and understanding due to lack of available information (e.g., problems with source, delivery, type and timing of information) may also contribute to the problems. However, many reported factors were similar to the general population such as concerns about unwanted effects of medication and how these weigh up against perceived benefits, perceptions of severity of disease and control of its symptoms, and difficulties related to access to care (e.g., appointment time, waiting time, short length of consultation, lack of doctors, difficulty consulting the same doctor).

In terms of barriers specific to these particular populations, the current study provided evidence that Ramadan tended to be an important factor which influenced adherence to medications among study participants. A number of Muslim patients in the present study made some alterations to their medication-taking behaviour to suit their fasting such as modifying the number of doses, time of doses and the time span between doses and even the total daily dose. Some of these actions were taken without consulting a doctor and without seeking medical advice. Patients also reported that their doctors did not talk with them about fasting and medicine taking unless they asked. This finding is consistent with those of Salti et al. (2004) who found that approximately 25-33% of Insulin or oral anti-diabetic drug users changed their medication while fasting. Their study was conducted in 13 countries with the majority population being Muslim (Salti et al., 2004).
Another recent study also showed that Muslim patients adapted their use of medicines in different ways while fasting, for example by changing the time of intake or by skipping morning medicines (Mygind et al., 2013). In both studies patients did not always discuss these changes with HCPs.

An implication of this is that HCPs should be aware that fasting may mean changes in medication-taking behaviours among Muslims, and thus HCPs should support Muslim patients by taking their views, concerns and preferences into consideration in relation to their religious needs to prevent any changes from being made. It is also important to individualise care on the basis of patients’ social, cultural and religious needs (i.e., specific medical advice must be provided to individual patients). If required, HCPs should make appropriate changes in their patient’s dosage regimen according to the prescription components. If changes are not required, HCPs need to deliver some proper pre-Ramadan month education and medical counselling in order to teach patients about how they can manage their medication regimen safely and effectively in Ramadan. The best way to educate SA and ME individuals should be in a group session at clinics, GPs, community centre and local masjids. Not only patients but also HCPs should undertake educational programmes about Ramadan and how to help patients achieve safer fasting. It is also recommended that the issue of altered medication-taking behaviours during fasting should be included in MUR.

Participants in the present study reflected an attitude of fatalism and submission to God’s will in coping with illness, which might have an impact on their medication-taking behaviours. Participants felt that their fate in terms of their health was dependent on God and they described a tendency to leave everything up to God’s will. This finding is in line with the literature where spirituality was reported and often shaped illness experiences and medicine-taking practices (Adams, 2003; Devlin et al., 2006).

The potential for altered medication-taking behaviours or the potential for receiving conflicting advice from a HCP while travelling or being away from home either to go
back to their homelands or to take religious journeys such as for Hajj or Umrah was one barrier of particular importance and relevant for the SA and ME populations. Similarly, Ens et al. in their review found that SA patients tend to alter their medication-taking behaviours while travelling to their homeland or country of birth (Ens et al., 2013). This finding has important implications for raising the general awareness of SA and ME patients’ medication-taking and obtaining practices during travelling. For example, people with chronic diseases (e.g., diabetes) who are going for Hajj should have enough time to discuss it with a HCP and to consider a management plan for their illness. Pre-Hajj education seminars should be conducted. Travellers should take a sufficient supply of their usual medicines and also carry a written record giving the generic names in case further supplies are needed.

A few participants reported taking non-prescription medicines to help manage their illnesses. These were perceived to have fewer or no adverse effects compared to other medications. Although the use of such remedies was not associated with non-adherence to medications among the study participants, this has implications for healthcare providers as patients who use these remedies may not inform their healthcare providers, and thus run the risk of potentially serious interactions with prescribed medications, which may adversely impact their health. To avoid this, it is therefore essential for pharmacists and HCPs to question patients about their use of alternative therapies. More awareness of these remedies and their potential problems and hazards needs to be raised amongst HCPs.

The extent of family support was identified in the current study as one of the factors that could lead to altered medication-taking behaviour. Almost half of participants received help with their medicines, mainly from family members. The current study identified the considerable role of patients’ families in their disease management in general and in medication taking in particular. Families were frequently quoted as an important source of support. For the majority of participants, this help was sought on a regular basis and in regards to almost all
aspects of medicine management. From 39 participants who received help with medicines, 26 (67%) reported having a low level of education (i.e., high school or below) and all of them had a first language other than English. The majority of participants who received help with medicines were younger \( \leq 65 \) (n=32/39, 82%) and were on \( \leq 8 \) medicines (n=22/38, 58%).

Strong evidence suggested that social support from family and friends can help patients take medicines correctly (Vaglio et al., 2004; Lee S-Y et al., 2006). However, researchers studying behaviours and outcome among older adults have hypothesised that social support might buffer the negative consequence of patients with limited literacy (Lee et al., 2006, Johnson et al., 2010). Johnson et al. concluded that social support was associated with better adherence for patients with adequate health literacy but not with limited health literacy (P<0.05) unless patients with limited literacy have a trusted person in their lives in whom they can confide. The reason for this was that limited-literacy patients were less likely to ask providers questions and infrequently brought relatives with them to the pharmacy. The findings of these studies were consistent with our study, which showed that participants who received help with medication from a family member were more likely to be identified with intentional non-compliance. One of the reasons for this could be due to inappropriate advice or information provided to patients by their families.

A further reason for poor compliance identified in the current study was medical advice and prescription medication borrowing and sharing. Sharing prescriptions and medical advice among family members is commonplace (Avery, 2008). A qualitative study (Bolton et al., 2002) looking at medication management habits of residents from non-English speaking backgrounds (Chinese and Arabic) found that a significant proportion of these people practiced prescription medicine borrowing and sharing behaviour. Researchers identified a number of conditions that facilitated this behaviour such as sharing medicines with someone else if they had the same prescription or if they were a family member wanting the same
medicines. Patients borrowed medicines if they had run out of prescription medicine in the short term. Patients also lent their medicines if they wanted to help a friend or kept leftover medicines for ‘next time’. Studies also identified that patients asked their GP for the same medication that a family member had been prescribed. Most of these findings were similar to those of an American study (Goldsworthy et al., 2008).

These results provide further support for the fact that the effect of family on patients’ compliance and safety should not be ignored especially for patients from SA and ME cultures. The result suggests that a family-centred approach to education by healthcare providers may be beneficial. It is therefore important to ask patients during consultation to declare whether they receive help or assistance with their medication and to describe the nature of support provided, how often and in which circumstances or occasions help is needed and whether the support obtained from these sources is accurate to promote proper use of medications. How family members view a medication, and the interactional relations between patient and family, should also become a vital question for clinical practice. The strong familial and social relations held within these societies can also be utilised by healthcare providers through involving family members in discussions and decisions about patients’ treatment plans and consequently this can help establish a positive collaboration with the family that will translate to improve compliance and prevent any negative effect that may occur when involving uninformed carers in patients’ care. Educational programmes via different media sources such as radio, television, and lecture courses are recommended and might be more useful within the SA and ME cultures. These can also help to correct the misconceptions and alter patients’ attitudes that have the potential to result in intentional non-adherence to medications among SA and ME patients.

Participants in this study reported many problems with source, delivery, type and timing of information in having their medicine use and needs met. As regards source, 37 (48%) participants reported seeking information from one source in
which the doctor was the most frequently mentioned as the source of information. The rest of the participants (40/77, 52%) reported seeking information from more than one source in which the doctor remained the primary source of information.

The identification of the source was dependent on patients’ views that doctor is the only person who has acquired the knowledge and skills for providing trustworthy and reliable information and solving any problem. Some of the responses demonstrated unquestioning trust in their doctors. Various studies reported that some SA and ME patients have unquestioning trust in their doctors in which patients agree with any decision the doctor makes with regard to their health and medication regimen (Thompson and Stewart, 2001; Bolton et al., 2002; Rashid, 2010; Opara et al., 2010, Samman and Chaar, 2013). The reason for their belief may be the ‘high regard’ they hold for them or their limited options. For example, in this study patients who were unable to communicate in English were restricted to the opinions of doctors who speak the same language and thus are highly reliant on them.

The problem with consulting only the doctor is that doctors do not always offer sufficient time and attention when patients want to ask questions and thus patients may stop asking and not take their medicines as instructed (Samman and Chaar, 2013). Insufficient time spent with doctors may be linked to doctors being seen as too ‘busy’ or the consultation time being taken up by administrative tasks. Some patients in this study felt empowered and managed their own care and made active decisions without looking for further sources of information when they were unable to access or failed to receive sufficient information from their doctor.

It was also identified that many patients from both ethnicities preferred to consult a doctor who speaks the language of patients’ native country instead of English, and this was not dependent on English proficiency or literacy skills of patients. They explained that they can better describe their health problems to doctors who speak their own language and are also better able to understand the information given to them, especially given that most patients even if they speak English may not know
medical terminology. Patients also expressed the belief that doctors from the same ethnicity shared the same language, social experiences and cultural beliefs; thus they were able to understand patients’ worries, concerns, problems, preferences and needs better. Different studies reported that patients tend to prefer physicians who are of their own race/ethnicity even if they are able to speak perfect English or are not first generation (Saha et al. 1999; Garcia et al. 2003), and also tend to use more healthcare and are less likely to postpone care when they have physicians who are of their own race/ethnicity (LaVeist et al., 2003). Race-concordant visits are longer and characterised by more positive effects (Saha et al. 2000). Shared language, social experiences and cultural beliefs may also drive some of the preferences to consult a doctor from the same ethnicity (Schecter et al., 1996; Saha et al., 1999). One study reported that, even if patients are not satisfied with GPs’ counselling, they prefer to consult a GP from the same ethnic origin, especially patients who are unable to speak or read English fluently (Samman and Chaar, 2013).

Patients also report higher satisfaction when they are able to choose their provider (LaVeist and Nuru-Jeter 2002). Kulwicki et al. (2000) found that non-culturally and linguistically diverse HCPs treat all patients similarly without attention to cultural needs. Schnittker and Liang (2006) concluded that racial/ethnic concordance promotes better encounters mainly among patients who prefer concordance. Thus, practices should give patients opportunities to choose their own doctor according to their preference if possible. However, it is not always possible to provide a HCP who speaks the same language as the patient.

Another problem was that the majority of patients (60%) had never discussed any matters with their pharmacist especially among ME individuals. The reason for not consulting a pharmacist on issues regarding medicines was that some SA and ME patients hold views that pharmacists are only supplier of medication. They perceived pharmacists as not being responsible or capable of more than dispensing their medications and thus avoided communicating with them. These participants
were convinced that it was the doctor’s duty to tell them everything they were supposed to know about their medications, especially given that doctors are the HCPs who hold their medical records and prescribe medicines.

The findings of the current study are similar to those of Thompson and Stewart (2001) and Samman and Chaar’s (2013) studies. Thompson and Stewart (2001) conducted a study to explore the culturally and linguistically diverse older population’s opinions on information received about medicines. The majority of participants including ME- and SA-language speakers identified GPs (90%) as the main source of information followed by pharmacists (57%). Pharmacists were most often seen as a supplement to the GP. Only occasionally were pharmacists seen as first point of contact. In patients’ opinions, the GP was the responsible person to tell them information about their medicines. Those who consulted pharmacists for advice perceived that this was mainly to query the GP’s information, while those who did not consult pharmacists reported that they were not interested in further information, either because they had enough or because they were concerned that they would get conflicting advice from doctor and pharmacist (Thompson and Stewart, 2001). The limitation of this study was that the proportion of older ME- and SA-language speakers was too small. A more recent study showed that Arabic-speaking general practitioners followed by Arabic-speaking pharmacists were identified as the main source of medicines and disease information among older Arabic-speaking Australians (age>65 years) who were unable to speak or read English fluently (Samman and Chaar, 2013).

A further reason for not consulting a pharmacist especially among ME respondents in this study was due to the absence of a pharmacist who spoke the same language as the patient, which may lead to lack of patient counselling and consequently poor patient satisfaction and adherence, especially given that much of the communication that takes place in the pharmacy is verbal. Unavailability of a pharmacist who speaks the same language as the patient hinders the patients’ ability to access information (Samman and Chaar, 2013). The evidence from this
study suggests that there was a great demand or reliance on HCPs who speak the same language as the patient for information. Thus, the preferred language spoken and read by the patient should be monitored. More bilingual staff should be hired in areas with a high percentage of SA and ME groups.

Some research has highlighted difficulties in accessing Arabic-speaking pharmacists (Quine, 1999). Thompson and Stewart (2001) advised of the benefit of having a register of pharmacists who speak languages other than English. Brown et al. (2007) suggested that patients prefer physicians with whom they share language and/or cultural concordance, to the extent that they are willing to pay more or travel a considerable distance to obtain racial/ethnic concordance in the physician-patient relationship, which improves care (Saha et al., 1999, LaVeist and Nuru-Jeter, 2002, LaVeist et al., 2003). This could also apply to the pharmacist-patient relationship but such positive relationships are less likely to occur when an area does not contain enough pharmacists of a given race/ethnicity to serve local patients who are of concordance with the corresponding race/ethnicity. In a qualitative study conducted among different ethnic groups to explore ethnic differences in attitudes to medicines and medicines-taking (Bassett-Clarke et al., 2012), lack of familiarity with pharmacy staff due to an increasing use of locum pharmacists and a younger generation of pharmacists with a different communication style translated into less discussion with pharmacists and therefore less opportunity to give and receive information.

Participants who consulted pharmacists had ambivalent views regarding these consultations. Many expressed negative viewpoints and reported that pharmacists were similar to doctors: they only provided the basic information regarding their medicines (e.g., how to take or use the medicine and therapeutic indication) whereas the more important and detailed information that patients needed and wanted to know such as side effects and how to cope with them were not provided unless patients asked. Participants who reported consulting a pharmacist revealed that this was partially because they could not consult a doctor who speaks the same language.
language and thus they had to consult a pharmacist with whom they were sharing a language, as mentioned earlier, or because their doctors did not provide them with adequate information or time to ask and thus patients valued any source of information to make informed decisions on how to manage their medicines effectively. Consulting pharmacists was not perceived as a substitute for receiving information from doctors but was seen as helpful.

The pharmacists, therefore, need to promote themselves more as an information source. This may be more successful if pharmacists make an effort to increase prescription medication counselling. This would confirm in patients’ minds that pharmacists have the knowledge to answer questions and that provision of prescription medicine information is a necessary part of their responsibilities (Thompson and Stewart, 2001). For example, in the current study participants who hold positive views on pharmacists’ consultation were more likely to be those who had their MUR conducted or were counselled and provided with information that was tailored to their needs and preferences when approaching pharmacists.

One of the significant research findings from this work was that the more patients consult a HCP, the more they are likely to get information about their disease and treatment, and the more information patients get may impact on the fact that they do not want to take their medicines either because the information was conflicting from different HCPs, which may create confusion, or because the information was scary and caused unnecessary anxiety, particularly in relation to side effects. This result should be interpreted with caution because no figures were found to show the rate and/or content of counselling given by hospital consultants. Thus, how consultants interface with their patients and what type of information they provide has to be tested in future studies. This finding is inconsistent with another finding which showed that the more information that is given, the better is adherence (Maidment et al., 2002). It is well known that providing patients with information about prescribed medicines is essential to understand the benefit and risks of medication and to facilitate their appropriate use (Horne, 2001). However,
providing basic information such as how and why to take medicine does not guarantee the appropriate use of medication; rather, the information should be tailored to meet the needs of the individuals (Peveler et al., 1999). People prescribed the same medicines may require different levels of information. For example, in this study some participants reacted by becoming actively involved with their treatment and seeking detailed information about aspects such as possible side effect of their medicine and how to cope with it. Others, in contrast, responded with more ‘avoidant’ coping strategies, for example, by thinking about their illness and medicines as little as possible or wanting others to ‘take charge’, and may find additional information unhelpful or even distressing. Thus, the quality of the information is more important than the quantity. The quality of information refers to the extent to which individuals perceive that information has met their needs and are satisfied with the information provided (Horne et al., 2001).

Besides the source, content and type of information, also the timing and moment of providing information was seen as a barrier for meeting patients’ health and medicines needs. There were inconsistent views among participants regarding an appropriate time for providing information. Many participants reported that it was enough to provide verbal information on medicines at the time of diagnosis or first prescription whereas others wished the information to be repeated and updated regularly during routine consultations for many reasons: firstly, patients’ information needs may change according to their situation and experiences. Secondly, 40-80% of medical information provided by HCPs is forgotten immediately. In addition, almost half of the information that is remembered is incorrect (Kessels, 2003). There are three basic types of explanation for why patients forget verbal information. First, HCPs using difficult terminology; second, the mode of information (e.g., spoken versus written); and, third, factors related to the patient such as low education or specific expectations (Kessels, 2003).

It was identified that the way the information was delivered to many patients by HCPs was not tailored to their preferences and needs. Many patients indicated that
the only medicine information they received was in the form of verbal dosing instructions, which can be easily forgotten by some participants. In addition, patients had never been told about alternate forms of information and had never been given any written information about their medicine except for the patient information leaflet (PIL), which is always in English. Even the PIL was not given to all patients. Houts et al. suggested that written information is better remembered and leads to better treatment adherence (Houts et al., 1998).

Written instructions, however, presented difficulties to some patients with low education or literacy and who were non-native English speakers. It was indentified that the majority of participants (10/13, 77%) who wanted more updated and repeated information had no university education and none of them had English as their first language. Doctors routinely take for granted patients’ ability to read and understand all types of health-related materials (Kessels, 2003). In reality, many patients have difficulty communicating with their healthcare professionals and following up with self-care instructions due to poor understanding of basic health vocabulary, limited background health, and limited education and native-language skills (Kessels, 2003).

Those who had limited language or literacy skills reported relying in their family members to obtain information from GP surgery or pharmacy and interpreting English verbal or written information about medicines, which they described as inconvenient. Participants also reported that family members may lack the necessary skills to fully communicate their message to the doctor or the doctor’s advice to the patient. It is possible that family members also felt embarrassed to ask sensitive questions and overwhelmed when relaying bad news or were no longer available for interpreting owing to work and family commitments (Weissman et al., 2006). Untrained family members’ inability to adequately read and speak Arabic or English may compromise the patient’s health owing to a lack of training, medical vocabulary or health literacy required to understand and communicate information accurately (Weissman et al., 2006). Patients who did not have a family member to
act as an interpreter reported that they were not even provided with any other interpretation resources by primary care health professionals despite their request, which hindered their ability to access information and to seek care. Other researchers have found medicine and disease information targeting ME or SA languages speakers to be deficient (Kulwicki et al., 2000; Girgis and Ward, 2004).

Where communication problem exist, patients are less likely to consult about their ill health in the first place; the lack of a shared language can hinder the development of trust, increase the likelihood of healthcare staff failing to recognise the complexity of problems and decrease patients’ adherence to medical recommendations (Rivadeneyra et al., 2000). Interpreting may involve distortions: details may be omitted, statements added, concepts substituted, and complicated responses simplified or condensed (Jentsch, 1998). An interpreter may not speak the same dialect as the patient, while class differences and the interpreters’ own perception of their role reduce effective rapport with patients and hinder faithful interpretation. Confidentiality can be a concern for patients when interpreters are drawn from a small local community (Plunkett and Quine, 1996). In addition, the patient’s competence and control over communication are downgraded, patients are likely to make fewer comments and the ones which they do make are more likely to be ignored, the presence of a third party can disturb the flow of the consultation, and communication becomes indirect and more complicated (Rivadeneyra et al. 2000).

Direct communication with bilingual professionals may well be preferable, although this clearly depends on the professionals’ own consultation and communication skills (Baker et al. 1998). For many patients, trained interpreters are not available when they are needed. This may occur if there are small numbers of patients from a particular community in an area, if appointments are made at short notice and interpreters are already committed elsewhere, or if the numbers of interpreters available are too low to meet demand (Brooks et al. 2000, Chamba and Ahmad 2000). Other approaches have been developed in order to address some of the
shortcomings. Simultaneous translation, the approach used at international conferences, has been found to involve more utterances by both clinicians and patients than sequential interpreting and is more accurate (Hornberger et al. 1996). This method can, however, be more stressful for the interpreter. More readily available are telephones interpreting services (Jones and Gill 1998), but their cost can deter frequent use. Calling on nursing or administrative staff may appear to be a practical alternative, but such staff rarely have formal training or the skills that are needed; errors in translation can be common and topics that embarrass the translator may be omitted (Elderkin-Thompson et al., 2001).

It is well known that patients require information to empower them in their medicine-taking practices (Patel and Dowse, 2013). Determining patient information needs and health information-seeking behaviour is a patient-centred approach. If information needs and wants of patients do not match the information given by HCPs, decrease in self-management, self-care and adherence to medication as well as increase in dependency on healthcare services may occur. Thus, HCPs have responsibility and a duty of care to provide high-quality, tailored information (verbal and/or written) to patients to ensure their safe use of medicines. ME or SA languages speaking health literacy can be improved through the use of audio materials such as CDs, or visual materials such as videos, cartoon instructions or pictorial diagrams (Samman and Chaar, 2013). Even patients who read well often prefer non-written materials including straightforward picture books, videotapes or multi-media presentations. If written materials are required, they should use plain language at the fifth-grade level or lower. Health educators stress that people of all literacy levels prefer materials that are simple and easy to understand. Because many standard patient education materials are written at a high school or college level, they are often inaccessible to patients (Parker, 2000). Providing simple, accessible materials could reduce their fear of disease and treatment, empower them to take greater control over personal health, increase their options and allow their decisions to be more conductive to their health (Samman and Chaar, 2013). It has been reported that personal interaction in the
form of counselling or group sessions might be more successful than simply handing out pamphlets; these may be useful as a reference or refresher of patients’ knowledge but should not substitute ongoing patient education and follow-up.

The current study has shown that MRPs can be identified during the daily routines of community pharmacists. The Government has outlined plans on how the role of pharmacists should be extended in primary care, including a policy framework by which community pharmacists can be involved in prescribing and the provision of medicines’ management and medication review services. This would help the pharmacist to play an active and effective role in the management of medicines and help to reduce the number of patients who consult GPs about their medicines. Many studies have reported pharmacists’ ability of working with GPs in areas of medicines’ management and detection of MRPs.

SA and ME patients have little regard for the role of the pharmacist when it comes to managing their medication regimen; patients consider that the doctor holds more knowledge and revealed that they would only consult a doctor with any health issues (Aslam et al., 2001). Patients need to be educated about the role of pharmacies, and how pharmacists can help in case of side effects, minor ailments and any other health query. If patients are able to understand the role of pharmacists, the number of GP appointments will be significantly reduced and the GP will be able to spend more time with patients with more severe cases. Consequently, access to healthcare services will also be improved as patients will be consulting the right HCP for the right problem. This will effectively reduce the current burden on the NHS and health costs will be considerably reduced, allowing PCTs to spend more money on other areas of healthcare (Aslam et al., 2001). More importantly, findings of the present study highlighted the need for greater involvement of pharmacists in the care of SA and ME patients through much-needed patient education and counselling. With patient counselling pharmacists are in a great position to identify and correct any false beliefs patients might have.
Pharmacist should be encouraged to do MUR to patients to help patients manage their medicines more effectively. During this review pharmacists also can provide patients with appropriate information and advice about their medicines. The NHS community pharmacy contract details three levels of pharmaceutical care services: essential, advanced and enhanced services. Essential services such as dispensing were provided to SA and ME patients. However, evidence of provision of advanced services including medicine use reviews was lacking. This standard of care was not met for most of the patients interviewed. Most patients limited their interaction with community pharmacists to the re-supply of prescribed medicines or recommendations to treat minor ailments. Pharmacists can review patients’ medication records held in the pharmacy and target MUR at those at risk of experiencing MRPs. However, in practice there is still an ongoing debate about the profitability of an incentivised MUR service, where the objective is to meet target levels and not necessarily to focus on patients who are most in need of MUR (McDonalds et al., 2010). Concerns over GPs’ indifferent attitudes to patients’ MUR reports and feelings of territorial encroachment may discourage the provision of this service to relevant individuals (McDonalds et al., 2010).

This finding can inform the development of strategies to improve SA and ME patients’ understanding of their medicines and diseases and ultimately their quality of life. These strategies may lead to decreases in costs to patients and the British government through efficient health service delivery and better focused programmes. GPs and pharmacies in areas where non-English speaking residents are numerous should employ interpreters and bilingual staff, and utilise software to translate labels into variety of languages (Samman and Chaar, 2013).

Some participants in the present research study, who revealed that they frequently consulted a GP and/or nurse, still thought that their illness and medicines were not sufficiently reviewed. Reasons for why there was a lack of discussion were
highlighted by some participants, such as lack of time and doctors to review patients, bad relationship with doctor, and lack of trust and confidence in healthcare professionals and healthcare system.

Some participants found that the consultation time with the GP was rushed and they were not always listened to and they could not ask questions or discuss more than one problem each visit. Those who reported to have inadequate time with their GPs accessed care more (i.e., emergency GP consultations), had poor adherence and lacked information. More time means that there is time to listen to the patient, to arrive at a better understanding of the patient’s concerns and come to a more accurate and thorough diagnosis, to focus more on the patient and on the disease, and to have more time to work together to arrive at an acceptable treatment plan which may improve health outcomes. In contrast, not considering patients’ perspectives, wants, needs and preferences within the consultations and not involving them in decisions about their treatment plan increased patients’ dissatisfaction and anxiety and influenced their adherence. For several years GPs have found that consultation times are pressured and patients have expressed dissatisfaction with the time available with their doctors in satisfaction surveys (Hill and Freeman, 2011). Research showed that longer consultations are associated with better outcomes. More time means that there is time to listen to the patient, to arrive at a better understanding of the patient’s concerns and come to a more accurate and thorough diagnosis, to focus more on the patient and on the disease, and to have more time to work together to arrive at an acceptable treatment plan. This is shared decision-making. Where patients feel listened to, and have had their own views taken into account, they are more satisfied with the time they had with their doctor.

A number of participants felt neglected and detached due to the lack of attention given by their GP and described their fears of not being supervised more closely and not even being referred to a hospital specialist despite their request, which led to frustration and exasperation. When a participant wanted to be referred, this may
indicate a lack of trust in the competence and resources of the primary medical care provider or a strong belief in the competence and resources of the consultants. Bad relationship and lack of trust in healthcare providers led some respondents to be less likely to listen to the doctor’s advice and subsequently less likely to adhere to their medicines.

Patients’ desire for participation in decision-making and participation in other aspects of care differed between participants. Some patients expressed their desire to become more involved, engaged and responsible for decision-making for their own care. This can be facilitated through partnership, communication, information, and additional time and staffing. Even for those who did not want to be involved in their own care, trusting their doctors and nurses to care for them and to make appropriate treatment decisions, being able to ask questions and understand how decisions were made is important. Little et al. (2001) studied patient preferences for a patient-centred approach to consultation in primary care and the results strongly showed that partnership and communication (i.e., a sympathetic doctor interested in a patient’s worries and expectations and who discusses and reaches agreement on the problem and treatment), health promotion, a positive approach (i.e., being definite about the problem and when it would settle) and interest in the problem’s effect on patient’s life were the key elements of patient-centred healthcare that patient wanted. If patients did not receive these elements, they were less satisfied, less enabled and may suffer greater symptom burden and use more health service resources (Little et al., 2001).

Longtin et al. indicated that patient participation in their own care is limited by many factors such as rejection of new patient role, lack of health literacy and lack of medical knowledge, and lack of confidence in own capacities and type of decision-making required; for instance, most participants want to participate in major decision-making (e.g., whether to undergo coronary bypass) but are less interested about minor decisions (e.g., prescription for their illness) (Longtin et al., 2010). In addition, the desire to participate in decision-making and to be involved in the
treatment process is inversely proportional to the patient’s disease severity in most of the conditions. Other obstacles that may also hinder patients’ participation include older age, being a male, from a low socioeconomic class and from an ethnic minority background. Finally, patients who use alternative medicines might be more involved in healthcare-related decisions, although these findings lack consistency between studies (Longtin et al., 2010). Among healthcare workers, the acceptance and promotion of patient participation are influenced by desire to stay in control, lack of time and type of illness. Primary care physicians were more likely to encourage patient participation than specialists. Additionally, non-White physicians were less likely to encourage patient participation (Longtin et al., 2010). It can be seen that there are many obstacles hindering participation in patients’ own care which are applicable to our study. By highlighting these barriers, HCPs can estimate what level of involvement patients can have and how to address these barriers in order to support patients and encourage them to participate in their own care.

11.2 Personal reflections about the research

In qualitative research, it is important for researchers to understand and be aware of their own positions in the research process and how their personal characteristics and/or experiences might have influenced choices made in the research process, their understanding of the research participants, the phenomenon under study, or both, and ultimately, the knowledge constructed. It is now accepted that cultural, social, professional, biographical, and personal characteristics influence what is perceived, experienced, interpreted and reported. Consequently, reflexivity about the research process is considered an important task of qualitative researchers:

“Without such reflection the outcomes of the research process are regarded as "characteristics of objects," as "existing realities," despite their constructed nature that originates in the various choices and decisions researchers undertake during the process of researching". (Mruck and Breuer, 2003)
Reflexivity is the process of looking both inward and outward with regard to the positionality of the research and the research process (Shaw and Gould, 2001). It is also part of the production of knowledge (Blaxter et al., 2006). Clearly, researchers will always have an effect on the setting and the people they are studying since they have their own knowledge about these and data collection may be modified by their presence. They also play an important part in analysing and interpreting the data that is produced. In short, researchers cannot avoid having an impact on the process of research (Kosygina, 2005).

In this section I will reflect on how my personal characteristics and background may have influenced the research process and findings. I believe that my personal characteristics, in terms of gender, religion, culture and professional background have put me at a distinctive place, which proved advantageous in terms of facilitating the research process. However, my personal characteristics and background may have also potential negative impacts on the findings in which the results might be biased by my gender, religion, culture and professional background.

As a Middle Eastern researcher, I felt that I was perceived by the research participants as an ‘insider’, someone who shared the same cultural norms and belief system of the Middle Eastern community. I believe that this has placed me at an advantageous position which facilitated the research process in so many ways, for example, it enhanced co-operation and easier recruitment. I also felt that, as a result of my cultural background, participants felt an immediate connection and were happy to disclose and share information with me. This was apparent as some ME participants when they talked to me they used the word ‘we’ for ME group. This was also evident as some participants made their feelings explicit in terms of my cultural background:

“You are our daughter, we have to help you”

“You make us and the Arabic culture very proud. God bless you!”
In addition, it might have also made it particularly easier for ME participants to interact freely and encouraged them disclose and share their feelings, worries and concerns about MRPs and needs. ME interviews lasted longer and produced more information on issues regarding medicine use and service access. This may be the result of MEs talked in their own language, or may be related to both interviewee and interviewer being of the same culture.

I believe also that my Muslim faith had an influence on the participation rate and the research process. I always wore Islamic dress (hijab) which might have influenced the participation rate among Muslims from both ethnicities. Sharing the same faith with the majority of my participants I felt helped to create an instant connection between us, and the talk of God and Islamic values and beliefs painted most interviews. Nevertheless, the expectations of being a practising Muslim may have had a minor drawback with respect to participants revealing practices that might be judged as sins in the Muslim faith, such as the intake of alcohol. Only one participant admitted to consumption of alcohol, and I felt from the tone and facial expressions that he was not at ease to disclose such information.

My gender role as a female had a potential influence on the research process. In ME culture, there are defined gender-roles, which people are supposed to play and live by. Females are not supposed to mix with or talk to males, unless necessary. I was aware of that issue from the outset of my research and wondered whether there would be a problem recruiting and talking to male participants. I was afraid that males may not welcome or feel comfortable talking to me (as a female) about their disease, medications, etc. in sufficient depth and sincerity to allow the aims of the research to be achieved. However, after the pilot study with five participants in which four of them were male, my worries resolved as I was able to engage with male participants in a professional way that it was easy for them to share their stories with me. At the end of data collection, the analysis of interview transcripts showed that I was able to gather data of similar quality and depth from the male participants as that of female participants.
Nevertheless, there was an issue which might have been brought about due to my gender as a female and might have been disadvantageous in the research. Specifically, when I asked participants questions related to certain type of medicines or certain type of conditions, these were often not fully, freely or directly discussed. This is possibly due to the intimacy of the issue, complicated by my gender as a female. Discussing sexual problems and medicines for such problems are considered culturally inappropriate and embarrassing, particularly with someone of the opposite sex, even if that person is a healthcare provider.

As an unmarried young female researcher, I utilised the device of fictive kinship to neutralise cross gender relations. I used fictive kinship terms such as ‘brother’ or ‘sister’ when speaking with participants, especially with male interviewees who were closer to my age. This is a common practice among Muslims because it means that each one deals with the other with respect and as socially neuter (Al-Makhamreh and Lewando-Hundt, 2008). I also had a concern about interviewing male interviewees in private consultation rooms, and thus I conducted the interviews in an open area in the pharmacy or in a private consultation room by leaving the door slightly open or pulling up the curtains. This was important because of issues of safety, reputation and culture. However, this could have also been negative due to lack of privacy from other clients.

Despite being an ‘insider’ as a ME researcher, I was also ‘an outsider’ to the research participants, as I was unfamiliar with the life and contexts of patients who had a long term condition. This might have had an influence on how they might have perceived me, and consequently, behaved towards me. Therefore, I had to find a balance between being sensitive and responsive to the issues and concerns participants raised in a way to allow them to share their stories, and yet not influencing what they had to say in any way.

In terms of my identity as a researcher, I chose to introduce myself as a PhD student and a pharmacist. Therefore, participants might have suspected an association between myself and their healthcare providers. Consequently, they might have
concealed critical information fearing that I might share it with their healthcare providers, ultimately influencing the care they would receive. However, participants were assured that the information they provide was confidential and would not be shared with their healthcare providers. I believe this helped to put participants at ease and the amount of criticism to healthcare providers assured me that, to some degree, participants trusted in me and provided me with their true accounts of how they felt about their healthcare providers.

Despite being an ‘outsider’ as some of the patients talked to me by saying “us and you” locating me as a young and healthy person, I was an ‘insider’ from another perspective: that of a carer of my parents. My father and mother had more than one chronic condition and were using more than 3 regular medicines. My experience as a relative and carer of my father and mother inevitably shaped my views on MRPs among people of Middle Eastern culture. It allowed me to approach the study with some knowledge (i.e., having ‘cultural intuition’ and insight) about the subject and to address certain topics more easily or even be aware that I should address them. Sharing the experience diminished the distance and affected interviewees’ expression. They sometimes left sentences unfinished, acting under the assumption that “you know how.....” (e.g., inability to speak English and get interpreter). I knew too well what they were talking about as I had many relatives and friends with limited English proficiency. Because of my insider position, I had to be constantly alert and rigorously reflect on how my presence and how I am shaped the conversation as well as explain that while we may have shared experience, it was different for each and I want to learn theirs.

Another issue that became apparent, especially with illiterate patients or those who had a low educational level, is their perceived class difference. Some participants clearly stated their disadvantaged position compared to me (as an educated person who can read and write, and who is also a pharmacist):

“You are a pharmacist, you can read and write and speak English, so you could easily understand these things (meaning detailed information
about medicines), whereas I don’t. I am just a simple person, I cannot speak English and I cannot read and write.”

However, despite the perceived difference, participants were incredibly willing to me talk freely, and I did not feel they had reservations or intention to withhold information. In fact, I felt that participants were actually happy to have had the chance to speak for themselves and to be heard. They somehow thought of this research as an opportunity to raise their issues and concerns, hoping that the findings from this research would help to solve at least some of these problems.

After completing data collection, I was in the process of analysing my interviews; I found one disagreement between the literature and the reports of participants related to the influence of family on medication-taking behaviours. While family support was associated with better medication adherence in the literature, some participants in my study described that family support may lead to suboptimal medication adherence. As I was becoming a carer and I saw my parents giving advice to each other and sometimes sharing their tablets, I started to question the applicability of generalisation and I recognised the need for a more differential approach to examine ‘extent of family support’ in different cultures.

As I was going simultaneously through the processes of analysing the data and taking on some caring responsibilities, my insights and reflections of what I understood from the literature was gradually changing. Horsburgh (2003) indicates that findings of research represent the interpretation by the researcher of constructs developed and conveyed by participants. As I was taking some caring responsibilities, my way of understanding the issue of family involvement in patient’s medication-taking behaviours changed to expand my perspectives and include new dimensions of the roles and relationships between patients and their families from different cultures. I visited and revisited interviews that I analysed, looking at them thoroughly and finding differences to which I was blind before (e.g., whether patients receive help or assistance with their medication, and to describe the nature of support provided, how often, and in which circumstances or occasions
help is needed, and whether the support obtained from these sources was accurate to promote proper use of medications).

Studying the unfamiliar, such as South Asian culture may also be a barrier to identifying appropriate themes or issues. A stranger to the culture may miss clues or problems that are clear to an ‘insider’. In analysing the interviews with South Asian participants, I compelled myself to diligent content analysis and made a deliberate effort to put myself in the role of a learner from my teacher, the participants, to develop reciprocity with participants for the goal of equalising the research relationship and conducting research ‘with’ rather than ‘on’ (Pillow, 2003).

Reflexivity may be linked to issues of possible bias. For example, when researcher and participants share experiences, the assumption of researcher’s familiarity with participants’ realities carries the dangers of participants withholding information, they assume to be obvious to researcher and researcher’s taking for granted similarities and overlooking certain aspects of participants’ experience (Daly, 1992). However, attention was given to the issue of bias and the researcher received training about how to administer the questionnaire to participants in the exact same way. The importance of a non-judgmental tone of the researchers was emphasised, as was the importance of not influencing participants’ responses in any way. Probes were used only to aid in deeper exploration of the participant’s perspectives, and leading questions were avoided as they could introduce bias. In addition to training of the researcher, data gathered were examined for validity, internal reliability as well as what is known already from the literature in order to ensure that the data are authentic and reflect the experiences of all participants. Using a variety of sources for data gathering (i.e., mixed method approach and triangulation) and checking the audio-records and transcripts by the research team were also followed to avoid any possibility of bias. To secure that the data analysis was a trustworthy representation of the themes in the narratives rather than reflection of my biases, the research team was constantly consulted to consider the accuracy of the analysis.
11.3 Strengths and limitations of the study

Strengths of the study

- An important strength of this study was that the majority of study participants [MEs: 40 (100%), SAs 35 (88%)] used non-English speaking languages and were all from ethnic minority backgrounds, resulting in data which were rich in description of their views, concerns and needs regarding MRPs, especially given that medicine-related concerns and needs have not been addressed in any other study especially among SA and ME groups. Patel et al. (2003) reported that approaching ethnic minorities and non-English speaking groups is one of the challenges in recruitment of research participants and these groups are often inadequately represented in research.
- The methods employed in this research allowed access to participants’ views without using translators during interviews, thereby enhancing the quality of the data.
- A further strength is the use of mixed methods and triangulation method (i.e., the process of synthesising data from multiple sources). Triangulation in the current study enhanced reliability and validation. It also captured a more complete, holistic and contextual representation of MRPs. Therefore it played an important role in eliciting data and suggesting conclusions to which other methods would have been blind.

Limitations of the study

- There are some disadvantages to using the daily consultation method in pharmacies. One of them is that if the prescription was taken to the pharmacy to be dispensed by a patient’s representative, the patient was not available for recruitment. This was particularly true for women from SA or ME backgrounds who usually sent their husband or daughter or son to order or collect their medicines either because they were busy, housebound or unable to speak English.
- The sample of this research consisted of SA and ME patients with chronic diseases, therefore, results may not be transferrable to patients from other ethnic backgrounds. Although barriers related to healthcare providers or the healthcare system may be applicable to other ethnic groups living in the UK, careful attention must be paid before transferring the conclusions to other contexts.
- There is a possibility that inequality in recruitment in this study occurred between ethnic groups because of the inability to support the range of minority languages. However, the number of people who were ineligible was few (n=18) and it is possible that they would have refused to take part in the study but we have no evidence to support this possibility.
11.4 Implications for practice and policy

Findings of this research can be used to provide the foundation of programme development and aid in the design of culturally sensitive interventions to identify, solve and prevent MRPs. Where limited resources are available, targeted interventions may be most useful. It is recommended that interventions need to be guided by research findings, and that targeted interventions are formulated based on these findings (MRC, 2008). Results of this study show that MRPs may lead to medicine mismanagement and affect patients’ safety. If no action is taken into account to address MRPs and to support these patients, this will lead to poor chronic disease management and consequently more hospitalisation, co-morbidities, and wasted resources. Therefore, it might be useful to adapt a preventive approach which identifies, resolves and prevents MRPs. Healthcare providers, especially pharmacists, should make MRPs identification and prevention a standard part of the consultation process. Targeted MUR for SA and ME groups, for example, should be prioritised. The targeted MUR can be developed further to focus on all the issues that were reported to be specific to SA and ME groups. For instance, a checklist which asks patients about their medication-taking behaviour while fasting should be included. Asking patients about medication-taking and obtaining practices while travelling is also recommended in MUR. It is also important to ask patients during consultation to declare whether they receive help or assistance with their medication and to describe the nature of support provided. Targeted interventions may be then tailored according to different patients’ need on an individual basis.

The MRPs questionnaire has the potential to be advanced and developed as part of a medication use review for the detection of MRPs in patients with chronic disease from all ethnic backgrounds. One way of doing it, for example, is that the MRPs questionnaire could be developed into a simplified questionnaire loaded on computer and administered to patients by a HCP or it could be developed into a self-assessment questionnaire that is completed by patients. If the MRPs
questionnaire is completed personally by the patients, case scenarios can be developed and, after completing the results, these can be judged by a HCP. This method may also allow a HCP and a policy maker to measure the extent to which they are effectively addressing the needs and concerns of SA and ME groups in the community they serve. However, this method may work for some but not for others.

Attempts should be made to increase patients’ education to address the knowledge deficits, particularly in relation to the nature of illnesses, seriousness of diseases, and their potential complications through a group session or lecture courses at clinics, GPs, community centres, local masjids and temples or through educational programmes via radio and television. Perhaps this can be achieved through interventions whereby patients are given the opportunity to live the experience of having illness complications before their occurrence. This may be achieved through joining disease-specific support groups (e.g., diabetes support groups) and sharing sound experiences with identified group leaders and other unfortunate members who have already developed advanced diabetes complications. Sharing experiences with those who have lost their sight or limbs due to diabetes may allow patients to appreciate the severity of diabetes complications and adopt preventive approaches and healthier lifestyles including better adherence to their medications.

Proper pre-Ramadan and pre-Hajj month education and medical counselling should be encouraged. HCPs should be well informed about the religious practices of individuals practising a faith that can affect their chronic condition. A guide for pre-Ramadan and pre-Hajj counselling should be designed. Each patient’s treatment plan should be individualised and reviewed on an annual basis as their health status may have differed from the previous year. Healthcare professionals should use Islamic leaders in the community as a source of support to convey key health messages. A guide that supports HCPs to understand the implications of, for example, fasting in chronic disease, the advice they can offer their patients in a
culturally sensitive manner and where to refer to for help and information should be designed.

A family-centred approach to education would be beneficial as findings of the current study showed that the family constitutes a vital source of support to SA and ME patients. Involving family members in discussions and decisions about patients’ treatment plans would be beneficial to patients if they agreed to involving their families in their own care. Also, how family members view a medication should become a vital question in practice. Educational programmes via different media sources such as radio, television, and lecture courses are recommended and might be more useful within the SA and ME cultures. These can also help to correct the misconceptions and alter patients’ attitudes that have the potential to result in MRPs among SA and ME patients.

The preferred language spoken and read by the patient should be monitored. Where there is a need, letters to patients should be provided in different languages according to their needs and more multilingual staff should be hired in areas which have a high percentage of SA and ME groups. Improving patients’ languages speaking literacy should be made through the use of audio material such as CDs, or visual materials (e.g., videos, cartoon instructions or pictorial diagrams). If written materials are required, they should use plain language at the fifth-grade level or lower. Providing written information in the most commonly spoken languages in the UK for key drugs and key diseases such as cardiovascular, diabetes, and cancer is recommended. Also, developing a PMR system where pharmacists can print out labels in different languages was seen as helpful.

Adopting a patient-centred approach in delivering care is highly recommended, whereby doctors would involve patients as equal partners in all decisions about their treatment, especially in relation to medication selection and prescription. Eliciting patients’ priorities, identifying their expectations towards illness and its treatment and translating these into realistic objectives for the individual patient should be conducted.
Patients’ information on electronic databases should be accessed and shared among all healthcare providers involved in patients’ care. Religious, social and cultural beliefs and lifestyle priorities should be addressed and incorporated into patients’ medical records.

HCPs need to be educated in the differences when dealing with a multi-cultural population. They need to be aware of the different social and cultural factors of the ethnic community and how it can influence their attitudes and behaviours towards complying with their medication regimen.

Pharmacists have contributed significantly to the development and implementation of intervention strategies to reduce MRPs experienced by patients in the community. This is possibly because, at the community setting, the community pharmacists have the time and opportunity for face-to-face contact with the patient, which could be a factor that may be associated with better implementation of community pharmacy services. The findings of the current study strengthen the evidence that talking to patients and carrying out medication reviews through community pharmacy services can identify, solve and prevent MRPs. Nevertheless, interventions to identify and solve MRPs should be a shared responsibility of all HCPs. Mason and Bakus (2010) suggested an eight-structured process that can be adapted by all HCPs in identifying and resolving MRPs:

- Obtaining an accurate medication list that truly reflects what the patient is taking.
- Evaluating whether each medication is necessary or whether any other medication is required.
- Determining whether each medication is the preferred one for its indication;
- Assessing that dosage and regimen are correct.
- Reviewing the medication list for ADRs and DIs.
- Ensuring that proper monitoring and review takes place.
- Assessing adherence and causes of non-adherence.
- Resolving any discrepancies between the actual list and the one in the patients’ records.
For the SA and ME population, the researcher suggests an addition of another three points to the process:

- Working with carers and patients in the monitoring, prevention and resolution of MRPs to deliver high-quality pharmaceutical care.
- Empowering patients to be confident to take charge of their medications.
- Encouraging patients to register with their community pharmacy for extended services like Chronic Medication Service to help ensure patients are on the right medicines and understand how to get the best out of their medicines.

From April 2014, all elderly patients (age ≥ 75) will be assigned a named GP to coordinate their care. The responsibilities of these GPs will be to:

- Take lead responsibility for ensuring that all appropriate services are delivered to the patient.
- Where required, work with relevant associated health and social care professionals to deliver a multidisciplinary care package that meets the needs of the patient.
- Ensure that the physical and psychological needs of the patient are recognised and responded to by the relevant clinicians in the practice;
- Ensure that the patient has access to a health check if requested.

This will enable patients to establish a continuity of care with one HCP. Research evidence shows that continuity of care is associated with better understanding of health condition and treatment, medicine usage and adherence, and with cost saving in prescribing, hospital admissions and referrals, and use of A&E and overall cost of healthcare (Alison and Freeman, 2011). It is also associated with increased trust, security in doctor-patient relationship and reduces unnecessary and harmful medical intervention (Alison and Freeman, 2011). It will also increase awareness of the religious, cultural and social aspects of ethnic minority groups among health professionals. It was suggested that such awareness would aid the provision of individually tailored health promotion advice to SAs and MEs.
11.5 Suggestions for future work

- It would be interesting to evaluate the effect of interviewing patients inside a consultation room and outside a consultation room on number of MRPs identified.

- The study had a cross-sectional design and thus the perceptions and experiences of patients and the data obtained on MRPs represented those at the time of the study. These are likely to change over time, thus conducting a longitudinal study design is highly recommended. A longitudinal study design might also be advantageous as repeated measurement would allow the assessment of the consistency of MRPs, adherence/non-adherence and patients’ perceptions and beliefs over time.

- A review of MRPs in EMGs in the UK (Chapter 2 of this thesis) showed that there is a need for more research. Therefore, research on MRPs should be encouraged to identify the extent of the problems and to identify issues related to medicine use and service access. Also, research should be developed around a suitable theoretical framework as advised by Medical Research Council guidelines (Campbell, 2009) to help in understanding how different factors influence occurrence of MRPs, which would provide direction for the development of the best intervention to solve and prevent MRPs.

- Researchers are also encouraged to identify specific variables that are predicative of MRPs among SA and ME patients such as demographic variables and clinical outcomes. For example, studying pattern or relationship between MRPs, age and presence of illness complications. Appropriate tailored interventions must be devised and targeted at these variables to prevent MRPs for this particular population and these interventions may need to be tested.

- Tools to identify MRPs have been developed by previous researchers. To our knowledge, no tools have been developed to examine MRPs particularly in ethnic minority groups. Findings from this study will be valuable in this context; a rage of problems and their contributory factors were identified. Findings from the current study can be incorporated and developed into a generic tool and tested to confirm findings from this study and to examine the extent of problems in clinical practice.

- With regard to the use of scales in languages other than those they were tested for, several solutions may be helpful for future research purposes. Refining scales and validating them fully in a culturally similar population before their use in a culturally different context may be needed. Alternatively, new scales can be developed from grounded qualitative research involving the same population. This has the advantage of eliminating the need for translation.

- Cost-effectiveness studies of MRPs detecting and preventing interventions are also needed, as they would provide evidence for the importance of this
area of research and build the case for the need to direct health resources at decreasing MRPs.

- Future research could focus on evaluating interventions targeted at identifying and resolving MRPs among SA and ME patients and assessing whether these would improve medicine-taking behaviour. As patient-healthcare professional relationship was identified to be an issue, future research could examine the content of information provided and style of communication currently used by doctors involved in patients’ care. Results can then be used to inform the design of interventions targeted at improving the patient-HCP relationship. The impact of such intervention on MRPs could be then assessed.

11.6 Research contributions

What is already known on this topic?

- Medicine-related problems may lead to significant medicine-related morbidity and mortality;
- Up to date, there have been no studies which included the SA and ME patients’ perspectives on MRPs and their needs to address these problems.
- There is no proposed tool that could be used for the identification of MRPs in SA and ME groups.
- The extent of non-compliance with medications among SA and ME groups in the UK has never been estimated before.

What does this research add?

- This is the first study that explored and described medicine use and medicine-related problems experienced by SA and ME patients with chronic diseases in primary care in the UK, providing novel evidence that MRPs among these particular populations continue to be problematic across all chronic conditions, which may have life-threatening consequences.
- This study is also the first to measure the extent of non-compliance with medication among SA and ME populations in the UK using 8-item MMAS, indicating that non-compliance constitutes a significant proportion in SA and ME patients.
- The current study also highlighted differences between SAs and MEs participating in the study and so far it is the only one to propose a tool that can be used in SA and ME populations to identify MRPs and to detect factors that may contribute to the problems.
Chapter 12 Conclusion

Based on Gordon’s coding frame the following types of MRPs were identified: adverse drug reactions and drug interactions; intentional non-compliance; cognitive, physical and sensory problems; and issues with concurrent use of herbal and alternative therapies. Problems with drug-prescribing; lack of information; monitoring and review; repeat prescriptions; GP surgery and pharmacy service were also identified. These problems influenced adherence and informed decision-making among participants.

Based on this study, a number of factors which may contribute to MRPs among SA and ME groups were found. Some factors were reported to be specific to these cultures; these included religious practices and beliefs, extent of family support, travelling abroad back to their homeland or to take religious journeys. Perceptions of healthcare providers, difficulty consulting a doctor of the same gender, lack of referrals to a specialised care, language and communication barriers, lack of translated resources, illiteracy, lack of involvement in the treatment decisions, lack of knowledge and understanding (e.g., problems with source, delivery, type and timing of information) may also contribute to the problems. However, other reported factors were similar to the general population. The relevance of these problems or factors to the wider population of SA and ME groups is still unknown at this point and further assessment is needed. The problems and factors identified in the current study needed to be tested in a larger sample and in a wider context.

This thesis provided evidence that non-adherence to medications and poor health status among SA and ME patients is a significant problem of a striking magnitude. The Morisky quantitative survey showed 67% of SA and ME patients were non-adherent with their medications.

The current study provided a theoretical framework for MRPs. It also supports developing MUR further and adding the specific issues that were reported by SA
and ME groups to support these groups in their use of medicines. The findings also support the development of pharmaceutical care plans specific to SA and ME groups. Prioritising medication use review to SA and ME groups, increasing patient education and counselling, providing verbal and written information in patients’ preferred language and according to their needs and wants, and raising awareness of SA and ME cultures among HCPs are also recommended. Tailored interventions to patients’ needs and wants may be required to improve medication use and service access. There was also a need to move towards a more patient-centred approach and more involvement of patients in their disease management targets and strategies. Finally, it is also important to include family members in these plans, as the study showed that family members may be an important asset in a patient’s life.
References


Rashid T., (2010). Medicine-related problems in Asian patients who have respiratory, diabetes and cardiovascular disease. Mpharm, School of Pharmacy, University of Hertfordshire.


## Appendices

### Appendix 1: An overview of MRPs classification system.

<table>
<thead>
<tr>
<th>Article</th>
<th>Terminology</th>
<th>Definition</th>
<th>Classification</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strand, et al. (1990)</td>
<td>DRP and DTP</td>
<td>&quot;Any undesirable event experienced by the patient that involves or is suspected to involve drug therapy and that actually or potentially interferes with a desired patient outcome&quot;.</td>
<td>(1) &quot;Need additional drug therapy&quot;; (2) &quot;Unnecessary drug therapy&quot;; (3) &quot;Wrong drug&quot;; (4) &quot;Dosage too low&quot;; (5) &quot;Dosage too high&quot;; (6) &quot;ADR&quot;; (7) &quot;Compliance&quot;.</td>
<td>1. This system used a clear definition; 2. This classification system is not hierarchal; 3. This classification system has no causes; 4. This classification system has no interventions classifications to solve the identified DRPs; 5. This system is usable in practice but has not been validated.</td>
</tr>
<tr>
<td>Hanlon, et al. (1992)</td>
<td>DRP</td>
<td>None</td>
<td>The criteria of Medication Appropriateness Index (MAI) include (1) indication; (2) effectiveness; (3) dosage; (4) correct direction; (5) practical directions; (6) drug-drug interaction; (7) drug-disease interaction; (8) duplication; (9) duration and (10) expense.</td>
<td>1. This system used no clear definition; 2. This classification system is not hierarchal; 3. The causes of DRP integrated in the problem description; 4. This classification system has no interventions classifications to solve the identified DRPs; 5. This system is usable in practice but has not been validated.</td>
</tr>
</tbody>
</table>

358
<table>
<thead>
<tr>
<th>Article</th>
<th>Terminology</th>
<th>Definition</th>
<th>Classification</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>The American Society of Health System Pharmacists (ASHP) classification (1996)</td>
<td>MRP and MTP</td>
<td>“An event or circumstances involving drug treatment that actually or potentially interferes with an optimum outcome for a specific patient”.</td>
<td>(1) Medications with no medical indication; (2) Medical conditions for which there is no medication prescribed; (3) Medications prescribed inappropriately for a particular medical condition; (4) Inappropriate medication dose, dosage form, schedule, route of administration, or method of administration; (5) Therapeutic duplication; (6) Prescribing of medications to which the patient is allergic; (7) Actual and potential adverse drug events; (8) Actual and potential clinically significant drug–drug, drug–disease, drug–nutrient, and drug–laboratory test interactions; (9) Interference with medical therapy by social or recreational drug use; (10) Failure to receive the full benefit of prescribed medication therapy; (11) Problems arising from the financial impact of medication therapy on the patient; (12) Lack of understanding of the medication therapy by the patient; (13) Poor adherence.</td>
<td>1. The classification used a clear definition; 2. This classification system is not hierarchal; 3. The causes of MRP integrated in the problem description; 4. This classification system has no interventions classifications to solve the identified DRPs; 5. This system is usable in practice but has not been validated.</td>
</tr>
</tbody>
</table>
| Granada Consensus II (2002)                                             | DTP         | “.. are health problems, understood as negative clinical outcomes, resulting from pharmacotherapy, that for different causes, either do not accomplish therapy objectives or produce undesirable effects”. | **Necessity:** 1. Untreated health problem; 2. Effect of unnecessary drug.  
**Safety:** 5. Non-quantitative unsafe; 6. Quantitative unsafe. | 1. The classification used a clear definition; 2. This classification system is not hierarchal; 3. The causes of MRP integrated in the problem description; 4. This classification system has no interventions classifications to solve the identified DRPs; 5. This system is usable in practice but has not been validated. |
<table>
<thead>
<tr>
<th>Article</th>
<th>Terminology</th>
<th>Definition</th>
<th>Classification</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Krska, et al. system</td>
<td>Pharmaceutical care issues</td>
<td>“An element of a pharmaceutical care need which is addressed by the pharmacists”.</td>
<td>(1) potential/suspected adverse reactions; (2) monitoring issues; (3) potential ineffective therapy; (4) education required; (5) inappropriate dosage regimen; (6) untreated indication; (7) no indication; (8) repeat prescription no longer required; (9) inappropriate duration of therapy; (10) discrepancy between doses prescribed and used; (11) potential drug-disease interaction; (12) other.</td>
<td>1. The classification used a clear definition; 2. This classification system is not hierarchical; 3. This classification system has no causes classifications to solve the identified DRPs; 4. The intervention to solve DRP integrated in the problem description; 5. This system is usable in practice but has not been validated.</td>
</tr>
<tr>
<td>Westerlund system</td>
<td>DRP</td>
<td>“A circumstance related to the patient’s use of a drug that actually or potentially prevents the patient from gaining the intended benefit of the drug”.</td>
<td>(1) uncertainty about aim of the drug; (2) drug duplication; (3) drug-drug interaction; (4) contraindication; (5) therapy failure; (6) adverse effect; (8) underuse of drug; (9) overuse of drug; (10) other dosage problem; (11) difficulty swallowing tablet/capsule; (12) difficulty opening drug container; (13) other problem of administration/handling; and (14) other.</td>
<td>1. The classification used a clear definition; 2. This classification system is not hierarchical; 3. The causes of DRPs integrated in the problem description; 4. This classification system has interventions classifications to solve the identified DRPs; 4. This system is usable in practice and has been validated.</td>
</tr>
<tr>
<td>NCC-MERP Taxonomy of medication error (2003)</td>
<td>Medication errors</td>
<td>“any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the healthcare professional, patient, or consumer”.</td>
<td>(1) Dose omission; (2) improper dose; (3) wrong strength/concentration; (4) wrong drug; (5) wrong dosage form; (6) wrong technique (includes inappropriate crushing tablets); (7) wrong route of administration; (8) wrong rate (probably relating to administration); (9) wrong duration; (10) wrong time; (11) wrong patient; (12) monitoring error (includes contraindicated drugs); (13) deteriorated drug error (dispensing drug that has been expired); (13) other.</td>
<td>1. The classification used a clear definition; 2. This classification system is not hierarchical; 3. The causes of medication errors integrated in the problem description; 4. This classification system has no clear interventions classifications to solve the identified medication error; 4. This system is usable in practice and has not been validated.</td>
</tr>
<tr>
<td>Article</td>
<td>Terminology</td>
<td>Definition</td>
<td>Classification</td>
<td>Comments</td>
</tr>
<tr>
<td>---------</td>
<td>------------</td>
<td>------------</td>
<td>----------------</td>
<td>----------</td>
</tr>
<tr>
<td>Gordon, et al. (2005)</td>
<td>DRP</td>
<td>&quot;Any problem that impacts on the patients' ability to manage their medicines effectively&quot;.</td>
<td>(1) Interactions; (2) non-compliance; (3) Cognitive, physical and sensory problems; (4) Drug-prescribing problems; (5) Interface, monitoring and review; (6) Lack of information or discussion; (7) Problems with repeat prescriptions; (8) GP surgery and pharmacy service problems.</td>
<td>1. The classification used a clear definition; 2. This classification system is not hierarchal; 3. The causes of DRP integrated in the problem description; 4. This classification system has no interventions classifications to solve the identified DRPs; 5. This system is usable in practice and has been validated for use in pharmaceutical care research.</td>
</tr>
<tr>
<td>AbuRuz, et al. (2006)</td>
<td>Treatment-related problems</td>
<td>&quot;An event or circumstance involving patient treatment that actually or potentially interferes with an optimum outcome for a specific patient&quot;</td>
<td>(1) Indication; (2) Effectiveness; (3) Safety, (4) Knowledge; (5) Adherence and (6) Miscellaneous.</td>
<td>1. The classification used a clear definition; 2. This classification system is hierarchal; 3. This system consists of separate codes for problems, causes, and interventions; 4. This system is usable in practice and has validated for use in teaching, practicing and researching pharmaceutical care; 5. This classification is for use in research to identify the types, possible causes, interventions, nature, prevalence, and incidence of DRPs and also to indicate the pharmaceutical care outcomes in experimental studies.</td>
</tr>
<tr>
<td>The PCNE classification system version 6 (2010)</td>
<td>DRP</td>
<td>&quot;An event or circumstance involving drug therapy that actually or potentially interferes with desired health outcomes&quot;.</td>
<td>(1) Treatment effectiveness; (2) adverse reactions; (3) treatment cost; (4) others.</td>
<td>1. The classification used a clear definition; 2. This classification system is hierarchical; 3. This system consists of separate codes for problems, causes, and interventions; 4. This system is usable in practice and has validated for use in pharmaceutical care research and practice; 5. This classification is for use in research to identify the types, possible causes, interventions, nature, prevalence, and incidence of DRPs and also to indicate the pharmaceutical care outcomes in experimental studies.</td>
</tr>
</tbody>
</table>
Appendix 2: A list of search terms used for this review.

<table>
<thead>
<tr>
<th>Search terms for 'Medicine-related problem'</th>
<th>And</th>
<th>Search terms for 'Ethnicity'</th>
<th>And</th>
<th>Search terms for 'United Kingdom'</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Drug related problem(s)&quot;</td>
<td></td>
<td>&quot;Ethnicity&quot;</td>
<td></td>
<td>&quot;United Kingdom&quot;</td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td>&quot;Ethnic group(s)&quot;</td>
<td></td>
<td>OR &quot;Great Britain&quot;</td>
</tr>
<tr>
<td>&quot;Drug therapy problem(s)&quot;</td>
<td></td>
<td>&quot;Race&quot;</td>
<td></td>
<td>OR &quot;England&quot;</td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td>&quot;Racial group(s)&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Drug self medication&quot;</td>
<td></td>
<td>&quot;Religion&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td>&quot;Religious group(s)&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Drug self administration&quot;</td>
<td></td>
<td>&quot;Minority group(s)&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Drug toxicity&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Adverse drug reaction&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Drug interaction&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Drug intoxication&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;drug contraindication&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Adverse drug effect&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Overdose&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Polypharmacy&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Drug evaluation&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Drug dose&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Drug monitoring&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Drug safety&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Drug screening&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Drug seeking behaviour&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Drug tolerability&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Drug tolerance&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Drug use&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Drug monitoring&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Drug utilisation&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Medicine related problem(s)&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Medication error(s)&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Medication adherence&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Medication compliance&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Medication therapy management&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Therapy related problem(s)&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Treatment related problem(s)&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Pharmaceutical care issue(s)&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Appendix 3: Studies on medicine use and medicine-related problems experienced by ethnic minority patients in the UK.

<table>
<thead>
<tr>
<th>Primary author and date of publication</th>
<th>Study design and study duration</th>
<th>Age (years)</th>
<th>Setting</th>
<th>Sample</th>
<th>Types of problems identified</th>
<th>Potential causes of problems</th>
<th>Interventions or recommendations to support patients in the use of medicines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chan C. (2000)</td>
<td>Structured and semi-structured face-to-face interviews.</td>
<td>20 to 45 years Chinese mothers.</td>
<td>GP surgeries and patients' homes.</td>
<td>38 GPs, 26 health visitors and 30 Chinese mothers of pre-school children.</td>
<td>Problems with access to health services, problems with poor compliance as well as problems with late in seeking antenatal care.</td>
<td>Communication and language barriers; Problems with interpretation provided; Problems with non-prescription medicine; Limited knowledge of the medical and healthcare system; Lack of believes in the treatment they received.</td>
<td>Increase involvement of ethnic minority groups in healthcare provision and utilisation.</td>
</tr>
<tr>
<td>Lip et al. (2002)</td>
<td>Cross sectional survey and questionnaire-based interviews, (11 months).</td>
<td>Mean age 69 plus or minus 9.</td>
<td>Anticoagulation clinics.</td>
<td>44% White European, 33% Indo-Asian, 23% Afro-Caribbean.</td>
<td>Some patients had limited knowledge of Atrial Fibrillation (AF) as well as its consequences and therapy; Problems with not taking medicines as advised.</td>
<td>Ethnic, cultural and religious differences; Communication and language barriers; Poor amount of counselling and information given to patients by healthcare professionals.</td>
<td>Not stated.</td>
</tr>
<tr>
<td>Primary author and date of publication</td>
<td>Study design and study duration</td>
<td>Age (years)</td>
<td>Setting</td>
<td>Sample</td>
<td>Types of problems identified</td>
<td>Potential causes of problems</td>
<td>Interventions or recommendations to support patients in the use of medicines</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>--------------------------------</td>
<td>-------------</td>
<td>---------</td>
<td>--------</td>
<td>----------------------------</td>
<td>-----------------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>Horne et al. (2004)</td>
<td>Exploratory, cross-sectional study using the Beliefs about Medicines Questionnaire (BMQ) and the Sensitive Soma scale.</td>
<td>Mean age of European and Asian were 24.2 and 22 respectively.</td>
<td>Not stated</td>
<td>500 UK undergraduate students of Asian (n=83) or European (n=417) origin.</td>
<td>High risk of not taking medicines as advised. Students of South Asian origin had higher General Harm score than those of European origin (i.e., they perceived medicines as being intrinsically harmful, addictive substances that should be avoided (p&lt;0.001) and they were significantly (p&lt;0.001) less likely to endorse the benefits of modern medication).</td>
<td>Cultural beliefs; Current and previous experience of taking medication.</td>
<td>Not stated.</td>
</tr>
<tr>
<td>Lip et al. (2004)</td>
<td>Cross sectional survey and questionnaire-based interviews, (3 months).</td>
<td>Mean age of total cohort 71</td>
<td>Heart failure clinics.</td>
<td>103 patients with CHF: 42 White, 34 Indo-Asian, 22 Afro-Caribbean and 5 Oriental</td>
<td>Indo-Asians and Afro-Caribbeans were less aware of CHF as well as its consequences and therapy; Problems with not taking medicines as advised</td>
<td>Ethnic, cultural and religious differences; Communication and language barriers; Poor amount of counselling and information given to patients.</td>
<td>Not stated.</td>
</tr>
<tr>
<td>Pardhan and Mahomed (2004)</td>
<td>Survey, (22 months).</td>
<td>&gt; 40</td>
<td>Diabetic clinics.</td>
<td>500 patients (268 South Asians and 232 Europeans).</td>
<td>South Asians were less aware of diabetes as well as its consequences; Problems with not taking medicines as advised and missing clinical appointments.</td>
<td>Cultural and religious influences; Language and communication barriers; Problems with interpretation provided.</td>
<td>Using pictorial flashcards to provide information for illiterate people instead of providing written information in a native language; Providing bilingual link-workers.</td>
</tr>
<tr>
<td>Primary author and date of publication</td>
<td>Study design and study duration</td>
<td>Age (years)</td>
<td>Setting</td>
<td>Sample</td>
<td>Types of problems identified</td>
<td>Potential causes of problems</td>
<td>Interventions or recommendations to support patients in the use of medicines</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>---------------------------------</td>
<td>-------------</td>
<td>---------</td>
<td>--------</td>
<td>-----------------------------</td>
<td>-----------------------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Morgan and Figueoá-Muñoz (2005)</td>
<td>Focus-groups interviews.</td>
<td>18 – 68</td>
<td>Community centres.</td>
<td>44 Africans.</td>
<td>Health service barriers; Intentional and unintentional non-adherence with drug regime; Cognitive problems affecting use of medicines; Lack of knowledge of illness as well as its therapies; Concern of side effects of the drugs; Problems with accessing healthcare services.</td>
<td>Cultural beliefs of illness, prescribed treatment and healthcare providers; Poor amount of counselling and information given to patients.</td>
<td>Providing patients’ education; Improve provider-patient communication.</td>
</tr>
<tr>
<td>Lawton et al. (2005)</td>
<td>Observational cross sectional study using in-depth interviews.</td>
<td>30 to ≥71</td>
<td>Patients’ homes.</td>
<td>32 Pakistani and Indian patients.</td>
<td>Problems with not taking medicines as advised; Fear of dependency.</td>
<td>Cultural beliefs of prescribed treatment and healthcare providers.</td>
<td>Providing patient education and counselling; Improve provider-patient communication; Providing bilingual link workers.</td>
</tr>
<tr>
<td>McDowll et al. (2006)</td>
<td>Systematic review and meta-analysis.</td>
<td>Not stated</td>
<td>Not stated</td>
<td>Blacks and East Asians.</td>
<td>Risk of adverse drug reactions (ADRs) to cardiovascular drugs.</td>
<td>Ethnic differences which are believed to affect response to drugs such as different distribution of cytochrome P450 (CYP) genotype in different ethnic groups.</td>
<td>Not stated.</td>
</tr>
<tr>
<td>Primary author and date of publication</td>
<td>Study design and study duration</td>
<td>Age (years)</td>
<td>Setting</td>
<td>Sample</td>
<td>Types of problems identified</td>
<td>Potential causes of problems</td>
<td>Interventions or recommendations to support patients in the use of medicines</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>---------------------------------</td>
<td>-------------</td>
<td>---------</td>
<td>--------</td>
<td>-----------------------------</td>
<td>----------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Gordon et al. (2007)</td>
<td>Face-to-face in-depth interviews.</td>
<td>≥18</td>
<td>Patients’ homes.</td>
<td>83% White and 17% Black.</td>
<td>Perceptions of side effects and methods of coping; Views and actions regarding the use of medicines; Cognitive, physical and sensory problems affecting use of medicines; Lack of information or understanding about use of medicines; Problems in services access.</td>
<td>• Under-estimating patients’ desire for information.</td>
<td>• Involve patients in evidence-informed decision making for safer and more effective disease and medicine managements. • Encourage pharmacists and patients to work together and share their experiences regarding the use of medicines and exchange information that will support patients in achieving optimal outcomes from their medications. • Encourage effective communication between secondary and primary care and patients for the continuity of safe and effective therapy.</td>
</tr>
<tr>
<td>Kumar et al. (2008)</td>
<td>Face-to-face interviews using the Beliefs about Medicine Questionnaire, the SF-36 health survey and the Health Assessment Questionnaire.</td>
<td>Not stated</td>
<td>Outpatient Rheumatology Departments.</td>
<td>100 patients of South Asian origin and 100 patients of White British/Irish origin.</td>
<td>Patients of South Asian origin had Specific Concern, General Overuse and the General Harm scores (i.e., Asian patients believed that drugs in general were more overused and more harmful than White participants and they were also more concerned about their DMARDs).</td>
<td>• Cultural beliefs.</td>
<td>• Not stated.</td>
</tr>
<tr>
<td>Primary author and date of publication</td>
<td>Study design and study duration</td>
<td>Age (years)</td>
<td>Setting</td>
<td>Sample</td>
<td>Types of problems identified</td>
<td>Potential causes of problems</td>
<td>Interventions or recommendations to support patients in the use of medicines</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>---------------------------------</td>
<td>-------------</td>
<td>---------</td>
<td>--------</td>
<td>-----------------------------</td>
<td>-----------------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>Sidi et al. (2009)</td>
<td>Face-to-face interviews using general health status (SF-36), MRP screening tool and Satisfaction with information about medicines (SIMS).</td>
<td>18 – 85</td>
<td>Community pharmacy</td>
<td>32 South Asians.</td>
<td>Lack of information on medicines; Intentional non-compliance; Lack of monitoring and review of medicines.</td>
<td>Pharmacy lack of information or opportunity to discuss medication-related issues or concerns; Language issues.</td>
<td>Not stated.</td>
</tr>
<tr>
<td>Opara et al. (2010)</td>
<td>Face-to-face interviews using MRP screening tool and SIMS tool.</td>
<td>18 – 85</td>
<td>Community pharmacies</td>
<td>South Asians.</td>
<td>Intentional non-adherence and lack of regular monitoring or review.</td>
<td>Cultural and language issues; 'Blind belief' and not recognising the pharmaceutical role of pharmacist; Limited understanding of patients' medicines.</td>
<td>Not stated.</td>
</tr>
<tr>
<td>Tsang et al. (2010)</td>
<td>Descriptive analyses 12 months</td>
<td>0-104</td>
<td>GP practices.</td>
<td>White and Asians.</td>
<td>Adverse events, ADRs and adverse effects.</td>
<td>Cuts puncture perforation or haemorrhage during medical care; Systemic antibiotic affecting ANS and CVS</td>
<td>Not stated.</td>
</tr>
</tbody>
</table>
Appendix 4: Patient records review in pharmacy.

Current medication (including prescription, OTC and homeopathic medicines dispensed and sold in past year)

<table>
<thead>
<tr>
<th>Drug name</th>
<th>Strength</th>
<th>Form</th>
<th>Directions for use</th>
<th>Quantities</th>
<th>Frequency of repeat</th>
<th>Start-Stop date (if applicable)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 5: MRPs tool for Gordon (English and Arabic versions).

MRPs QUESTIONNAIRE

CONFIDENTIAL

INTERVIEW SCHEDULE

IDENTIFICATION NUMBER: ..............................................................

.
.
.
.
.
.
.
.
.
.
.
.
.

PATIENT CODE .........................................................................................

ANY OTHER PERSONS PRESENT (e.g. A CARER, A TRANSLATOR, etc) ...........

DATE OF INTERVIEW: ...............................................................................  

START TIME:......... FINISH TIME:....................


369
### ABOUT YOUR MEDICINES

1. Which pharmacy(ies) do you usually take your prescriptions to be dispensed?

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Do you take all your regular prescriptions to this pharmacy?

(Prompt: all not; more than 1; yes; last 4 nos)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Can you tell me the names of the prescription medicines you take or use. If you are unable to tell me any names, please describe them to me.

(Prompt: under-the-tongue spray, patches, water tablets, retainer, evasion)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What other medicines do you take or use? (Prompt: medicines/cellulose bought from the pharmacy, herbal or natural remedies/tea, garlic, homeopathic remedies)

About each medicine:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What is the name of the medicine

What are you using this medicine for?

How often do you use this medicine? (Prompt: regularly with prescription medicines, how many times a year, last time)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

About each medicine:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How many and how often do you take/use each day?

Do you know what you are taking/using this medicine for?

For how long have you been taking/using this medicine?

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Does anyone help you with your medicines? (Prompt: filling, refilling or collecting your prescription from the pharmacy, refilling or collecting your prescription from the pharmacy, opening containers, reading labels, understanding or needing information, taking information, administration in a breaking tablet, measuring, taking in the dose, last dose given or taken by time or how much specifically for prescription, advice or need for medicines, asking on side effects, buying medication or other remedies for you, often. Please describe:

Yes Q1   No Q2   If yes, please describe how this person helps you.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Who is this person?

How does this person help you?

How often does this person help you which occasions help is needed?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Version 2 (final)   REC Reference 11/L0/1391   12/09/2011
### ABOUT THE ILLNESSES FOR WHICH YOU TAKE YOUR MEDICINES

4. In the past 5 years, have you:

<table>
<thead>
<tr>
<th>A</th>
<th>been admitted to hospital?</th>
<th>Yes</th>
<th>Q1</th>
<th>No</th>
<th>Q2</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>attended or been taken to A&amp;E or casualty?</td>
<td>Yes</td>
<td>Q1</td>
<td>No</td>
<td>Q2</td>
</tr>
<tr>
<td>C</td>
<td>called a GP as an emergency outside surgery hours (i.e. evenings or weekends)</td>
<td>Yes</td>
<td>Q1</td>
<td>No</td>
<td>Q2</td>
</tr>
<tr>
<td>d</td>
<td>called a GP or made an appointment as an emergency during surgery hours (i.e. daytime)</td>
<td>Yes</td>
<td>Q1</td>
<td>No</td>
<td>Q2</td>
</tr>
</tbody>
</table>

If yes, please tell me:

<table>
<thead>
<tr>
<th>A</th>
<th>Which year and month?</th>
<th>For what reason?</th>
<th>More about this? (Prompt: any follow up, any medicines changed or started?)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MORE ABOUT YOUR MEDICINES**

5. Some people do not always take their medicines according to the instructions, but adjust the dose according to what they think they need. Do you do this? (Prompt: how does medicine-taking fit in with your daily routine. When you get up. At meal times. Before or after meals?)

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very often</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
<td>Q4</td>
<td>Q5</td>
</tr>
</tbody>
</table>

Tell me more about this? (Prompt: what do you mean, the last time, why)

Do you:

- e attend hospital as an outpatient? | Yes | Q1 | No | Q2 |

f see any other person privately for your health? (Prompt: private doctor, osteopath) | Yes | Q1 | No | Q2 |

If yes, please tell me:

<table>
<thead>
<tr>
<th></th>
<th>Who you see?</th>
<th>For what reason?</th>
<th>How often?</th>
<th>The last time you attended?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### PEOPLE SOMETIME FORGET TO TAKE THEIR MEDICINES.

Do you do this?

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very often</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
<td>Q4</td>
<td>Q5</td>
</tr>
</tbody>
</table>

Tell me more about this. (Prompt: what do you mean, the last time, why)

What problems have you experienced with your medicines? (Prompt: side effects, problems with 2 medicines taken together, what do you do about it, how do you cope with it)

What would you do if you had a problem with taking your medicines? (Prompt: what would you do to help you with your medicines)
<table>
<thead>
<tr>
<th>Prompt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before today</td>
</tr>
<tr>
<td>Today</td>
</tr>
<tr>
<td>Next time</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prompt: how do you order them</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prompt: how do you collect them</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How often do you usually get prescriptions for your regular medicines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every month</td>
</tr>
<tr>
<td>Every six weeks</td>
</tr>
<tr>
<td>Every two months</td>
</tr>
<tr>
<td>Every three months</td>
</tr>
<tr>
<td>Other</td>
</tr>
</tbody>
</table>

8. Have you ever delayed taking your prescription to the pharmacy, after your supply of medicines has run out? Yes Q1 No Q2

If yes, tell me more about this. (Prompt: the last time, why)

9. What do you think about the information you are given on your medicines? (Prompt: from whom, what information)

Do you have enough information or would you like more? Enough Q1 More Q2

If more, what suggestions do you have to improve this?

10. Are there any further comments about your medicines that you would like to add? (Any points we have not discussed)

11. How do you feel that your general health status is? (Prompt: very good, good, fair, bad, very bad): Now does this compare to one year ago, how does it impact on daily living, dressing, shopping, going out? (Prompt: little, a lot, a little, no)

12. Is there anything you think that your doctor, pharmacist or nurse could do more to help you better manage your medicines?

13. Which GP surgery do you go to? Which GP(s) do you usually consult?

Do you have any questions that you would like to ask me?

Version 2 (final)  
REC Reference 11/LO/1391  
12/09/2011
Demographic Profile

May I ask how old are you? ........................................................................................................ Years (last birthday)

Gender?
Male ........................................................................................................ 1
Female ..................................................................................................... 2

Where is your country of birth?
The United Kingdom. ........................................................................................... 1
Other .......................................................................................................... 2

For other, please tell me the present name of the country? .........................................................
In which year did you come to the UK? ..............................................................................

Which ethnic group do you consider yourself to belong to?
Asian
Indian. ........................................................................................................ 1
Pakistani. .................................................................................................... 2
Bangladeshi. .................................................................................................. 3
Other Asian background. ....................................................................................... 4
Please describe: ........................................................................................................

Middle Eastern
Arabs. ........................................................................................................ 5
Iranian. .......................................................................................................... 6
Turkish. ......................................................................................................... 7
Other Middle Eastern background. ........................................................................... 8
Please describe: ........................................................................................................

Do you live alone or with others?
Alone. .......................................................................................................... 1
With others. .................................................................................................. 2
Please tell me who: ..............................................................................................

What is your main language?
English. ......................................................................................................... 1
Other. .......................................................................................................... 2
Please specify: ....................................................................................................

What is your religion? (This question is voluntary)
No religion. .................................................................................................. 1
Christian. ..................................................................................................... 2
Buddhist. ..................................................................................................... 3
Hindu. ........................................................................................................... 4
Jewish. .......................................................................................................... 5
Muslim. ......................................................................................................... 6
Sikh. .............................................................................................................. 7
Any other. ...................................................................................................... 8
Please specify: ....................................................................................................

374
Which of these qualifications do you have?
- University. □ 1
- High school. □ 2
- Primary school. □ 3
- No qualifications. □ 4
- Other. □ 5
Please specify ..........................................................

Which of the following best describes your current employment status?
- Full time work (i.e. more than 30 hrs per week). □ 1
- Part time work (i.e. one hour or more a week). □ 2
- Employed. □ 3
- Self-employed. □ 4
- Retired. □ 5
- Unemployed. □ 6
- Other. □ 7
Please specify ..........................................................

Full-time, part-time, homemaker, student, retired
MRPs questionnaire (Arabic version)

سري

السؤال المقابلة

رقم الهوية أو التعريف:......

..................

واحد تريف المريض...

إذا شخص آخر موجود أثناء المقابلة...

يوم المقابلة...

وقت بداية المقابلة...

وقت نهاية المقابلة...

376
<table>
<thead>
<tr>
<th>عن طريق</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>16</td>
</tr>
</tbody>
</table>

2. ما هي الأدوية الأخرى التي أتناولها أو أُستخدمها؟

3. هل يمكن أن تذكر أي أسلوب أو طريقة أخرى للتحكم في أعراض الحساسية؟

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

4. هل يوجد أي إجراءات أخرى التي تساعد في التحكم في الرش?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

5. هل يوجد أي علاجات أو أدوية أخرى يمكن استخدامها للتحكم في الرش؟

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

6. ما هو أفضل علاج أو طريقة للتحكم في الرش؟

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

7. هل يوجد أي أسلوب أو طريقة أخرى للتحكم في الرش؟

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

8. ما هو أفضل إجراء أو طريقة للتحكم في الرش؟

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

9. هل يوجد أي علاجات أو أدوية أخرى يمكن استخدامها للتحكم في الرش؟

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

10. هل يوجد أي أسلوب أو طريقة أخرى للتحكم في الرش؟

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

11. هل يوجد أي علاجات أو أدوية أخرى يمكن استخدامها للتحكم في الرش؟

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>
لا يمكنني قراءة النص العربي من الصورة. إذا كنت بحاجة إلى مساعدة أخرى، يرجى إعادة إرسال الصورة بصيغة يمكنني قراءتها.
11. هل تلتزم مسبقاً بناء الحماية الطبية في الصيدلة بعد أن تلتزم الأدوية الأصلية بما؟

<table>
<thead>
<tr>
<th>الشهر</th>
<th>كل شهر</th>
<th>كل نصف شهر</th>
<th>كل شرين</th>
<th>كل ثلاثة أشهر</th>
<th>كل سنين</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12. هل يمكن أن تكون السبب في السرطان في الأطفال بعد أن تلتزم الأدوية الأصلية بما؟

<table>
<thead>
<tr>
<th>الشهر</th>
<th>كل شهر</th>
<th>كل نصف شهر</th>
<th>كل شرين</th>
<th>كل ثلاثة أشهر</th>
<th>كل سنين</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13. هل يمكن أن تكون السبب في السرطان في الأطفال بعد أن تلتزم الأدوية الأصلية بما?

<table>
<thead>
<tr>
<th>الشهر</th>
<th>كل شهر</th>
<th>كل نصف شهر</th>
<th>كل شرين</th>
<th>كل ثلاثة أشهر</th>
<th>كل سنين</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

14. هل تلتزم مسبقاً بناء الحماية الطبية في الصيدلة بعد أن تلتزم الأدوية الأصلية بما؟

<table>
<thead>
<tr>
<th>الشهر</th>
<th>كل شهر</th>
<th>كل نصف شهر</th>
<th>كل شرين</th>
<th>كل ثلاثة أشهر</th>
<th>كل سنين</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

15. هل يمكن أن تكون السبب في السرطان في الأطفال بعد أن تلتزم الأدوية الأصلية بما؟

<table>
<thead>
<tr>
<th>الشهر</th>
<th>كل شهر</th>
<th>كل نصف شهر</th>
<th>كل شرين</th>
<th>كل ثلاثة أشهر</th>
<th>كل سنين</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

16. هل تلتزم مسبقاً بناء الحماية الطبية في الصيدلة بعد أن تلتزم الأدوية الأصلية بما؟

<table>
<thead>
<tr>
<th>الشهر</th>
<th>كل شهر</th>
<th>كل نصف شهر</th>
<th>كل شرين</th>
<th>كل ثلاثة أشهر</th>
<th>كل سنين</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

17. هل تلتزم مسبقاً بناء الحماية الطبية في الصيدلة بعد أن تلتزم الأدوية الأصلية بما؟

<table>
<thead>
<tr>
<th>الشهر</th>
<th>كل شهر</th>
<th>كل نصف شهر</th>
<th>كل شرين</th>
<th>كل ثلاثة أشهر</th>
<th>كل سنين</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

18. هل تلتزم مسبقاً بناء الحماية الطبية في الصيدلة بعد أن تلتزم الأدوية الأصلية بما؟

<table>
<thead>
<tr>
<th>الشهر</th>
<th>كل شهر</th>
<th>كل نصف شهر</th>
<th>كل شرين</th>
<th>كل ثلاثة أشهر</th>
<th>كل سنين</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 6: Morisky 8-items tool (English and Arabic versions).

<table>
<thead>
<tr>
<th>(Please circle the correct number)</th>
<th>No=0</th>
<th>Yes=1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Do you sometimes forget to take your [health concern] pills?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. People sometimes miss taking their medications for reasons other than forgetting. Thinking over the past two weeks, were there any days when you did not take your [health concern] medicine?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Have you ever cut back or stopped taking your medication without telling your doctor, because you felt worse when you took it?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. When you travel or leave home, do you sometimes forget to bring along your [health concern] medication?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Did you take your [health concern] medicine yesterday?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. When you feel like your [health concern] is under control, do you sometimes stop taking your medicine?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Taking medication everyday is a real inconvenience for some people. Do you ever feel hassled about sticking to your blood pressure treatment plan?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. How often do you have difficulty remembering to take all your medications? (Please circle the correct number)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never/Rarely..................................................0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once in a while..............................................1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sometimes....................................................2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usually.........................................................3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All the time..................................................4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


For additional information, contact: Donald E. Morisky, Sc.D., M.S.P.H., Sc.M., e-mail: dmorisky@ucla.edu; phone: (310) 825-8508
يوجد أحيانًا بعض الطرق التي تذكرها أشخاص عن كيفية تناولهم لأدويتهم. عند كل من الأفادات التالية، قد يُفضلك وضع علامة عند الصندوق الذي ينطبق عليك أكثر:

<table>
<thead>
<tr>
<th>نعم</th>
<th>لا</th>
</tr>
</thead>
<tbody>
<tr>
<td>هل تنسى في بعض الأحيان تناول الأدوية الخاصة بك؟</td>
<td></td>
</tr>
<tr>
<td>بعض الأشخاص لا يتخلون أدويتهم لأسباب غير معروفة. هل كان هناك أية أيام لم تتناول فيها الأدوية الخاصة بك؟</td>
<td></td>
</tr>
<tr>
<td>هل متميّز أن انقطاع التدوين أو توقف عن تناول أدويةك دون استشارة الطبيب، نظرًا لأنك تشعر بأن حالة قصيرة قصيرة قد ساعدت على نقل القيمة؟</td>
<td></td>
</tr>
<tr>
<td>عندما تتناول أدوية المنزل، هل تنسى أحياناً أن تأخذ معك الأدوية الخاصة بك؟</td>
<td></td>
</tr>
<tr>
<td>هل تناول الأدوية الخاصة بك أمس؟</td>
<td></td>
</tr>
<tr>
<td>عندما تتذكر أن سمحت تحت الطبيب، فهل توقف أحياناً عن تناول الدواء؟</td>
<td></td>
</tr>
<tr>
<td>إن تناول الدواء بصورة يومية قد يكون غير مثالي لبعض الأشخاص. فهل سبق أن شعرت بالاستعجال بسبب الأدوية بخطوة الجراحة الخاصة بك؟</td>
<td></td>
</tr>
</tbody>
</table>

сути الصعوبة التي تواجهها في تذكر تناول جميع الأدوية الخاصة بك؟

(من فضلك ذكر دورة حول الرقم الصحيح)

- أبداً... 0
- مرة كل فترة طويلة... 1
- أحياناً... 2
- عادة... 3
- دائماً... 4
Appendix 7: EQ-5D-3L tool (English and Arabic versions).

Health Questionnaire

*English version for the UK (validated for Ireland)*

© 1990 EuroQol Group EQ-5D™ is a trade mark of the EuroQol Group
By placing a tick in one box in each group below, please indicate which statements best describe your own health state today.

**Mobility**
- I have no problems in walking about
- I have some problems in walking about
- I am confined to bed

**Self-Care**
- I have no problems with self-care
- I have some problems washing or dressing myself
- I am unable to wash or dress myself

**Usual Activities** (e.g. work, study, housework, family or leisure activities)
- I have no problems with performing my usual activities
- I have some problems with performing my usual activities
- I am unable to perform my usual activities

**Pain/Discomfort**
- I have no pain or discomfort
- I have moderate pain or discomfort
- I have extreme pain or discomfort

**Anxiety/Depression**
- I am not anxious or depressed
- I am moderately anxious or depressed
- I am extremely anxious or depressed
To help people say how good or bad a health state is, we have drawn a scale (rather like a thermometer) on which the best state you can imagine is marked 100 and the worst state you can imagine is marked 0.

We would like you to indicate on this scale how good or bad your own health is today, in your opinion. Please do this by drawing a line from the box below to whichever point on the scale indicates how good or bad your health state is today.

© 1990 EuroQol Group. EQ-5D™ is a trade mark of the EuroQol Group
استیجین صخر

*(Arabic version for the UK)*

*(Best available)*
ضع علامة في مربع واحد من كل مجموعة من المربيات أدناه لتحدد العبارة التي تصف حالتك الصحية اليوم أفضل من غيرها.

القدرة على الحركة
☐ فين لدي أي مشكل أثناء المشي
☐ أعاني بعض المشاكل أثناء المشي
☐ أنا الألم المرير

العافية الشخصية
☐ أستطيع العلاج بدنى دون مشاكل
☐ أعاني من بعض الاضطرابات عند الاستحمام أو ارتداء الملابس.
☐ لا أستطيع الاستحمام أو ارتداء الملابس بدنى

الأنشطة المعادية (مثل العمل، الدراسة، الأعمال المنزلية، الأنشطة الأسرية، الترفيهية)
☐ لا أواجه مشاكل عند القيام بنشاطات اليومية المعادية
☐ أواجه بعض المشاكل عند القيام بنشاطات اليومية المعادية
☐ لا أستطيع القيام بالنشاطات اليومية المعادية

الألم / عدم الراحة
☐ لا أحس بآلام أو عدم راحة
☐ أحس بعض الألم أو عدم الراحة
☐ أحس بالآلام شديدة أو عدم راحة شديدة

قلق / اكتئاب
☐ لم أكن أشعر بذلك
☐ لدي قلق أو اكتئاب متوسطة
☐ لدي قلق أو اكتئاب شديد جدًا
لا يكن بوضع مسكين
صوره

لمساعدة الأشخاص في التعبير عن حالتهم الصحية، فمما يرسم مقياس مدرج (يشبه مقياس الحرارة) بحيث يشير الرقم 100 إلى أفضل حالة صحية يمكن تصويرها والرقم 0 إلى أسوأ حالة صحية يمكن تصويرها.

نود منك أن تشير على هذا المقياس إلى أي حد تعتقد أن صحتك جيدة أو سيئة اليوم.

من فضلك ارسم خطأ بدءها من المربع الموجود في الأسفل إلى أي نقطة موجودة على المقياس المدرج وتعكس حالتك الصحية اليوم.

حالتك الصحية
اليوم.

أسوأ وضع مسكين لصوره.
Pharmacist Invitation Letter

Title of research: Medicine use issues experienced by Asian and Middle Eastern patients.

Dear Pharmacist,

I am Faten Alhomoud, a Ph.D. student at the UCL School of Pharmacy. I would like to invite you to participate in this study that is seeking the views of South Asian and Middle Eastern patients on their use of medicines.

People of different cultural backgrounds have been found to experience different problems and concerns in the use of their medicines. This is pharmacy-based research, for this study we will need assistance from you in recruiting eligible patients from your pharmacy and providing access to conduct face-to-face interview with patients in community pharmacy.

Patient recruitment (approximately 20 patients per pharmacy) will be carried out using 2 approaches: (1) reviewing recent Medicine Use Review reports and Patient Medication Records in your pharmacy and (3) asking and inviting patients who present at your pharmacy (e.g. for a prescription, OTC or consultation).

If patients agree to participate, they will be interviewed by the chief investigator. The interview will take about 15 minutes in the community pharmacy consultation room. A summary of the study is attached to this letter.

If you are interested to take part in the study, please return the reply slip, that is attached to this letter, in the pre-paid envelope provided to the chief investigator’s address below or alternatively if you prefer you can email or phone the chief investigator to take part or to ask any question.

Thank you for your time and I look forward to hearing from you. Please do not hesitate to contact me on:
Faten Alhomoud (Chief Investigator)
Centre for Pharmacy Practice, the School of Pharmacy, University College London,
Mezzanine Floor, BMA House,
Tavistock Square, London WC1H 9JP
Tel: 020 7874 1290, Mobile: 07955367688
E-mail: faten.alhomoud.11@ucl.ac.uk

UCL SCHOOL OF PHARMACY
Department of Practice and Policy
BMA House, Tavistock Square, WC1H 9JP
Tel:+44 (0)20 7874 1270 Fax: +44 (0)20 7387 5593

389
Appendix 9: A summary of the study to be sent to the community pharmacists.

A summary of the study

Study title: Medicine use and medicine related problems experienced by South Asians and Middle Eastern patients with chronic diseases in primary care.
REC reference number: 11/LO/1391

Patients for this study will be recruited through community pharmacy. Therefore, there will be a 2 stage recruitment process: (1) recruitment of community pharmacy sites and (2) recruitment of patients from the community pharmacy.

Recruitment of Community Pharmacies

The Primary Care Trusts (PCT) in Camden and Islington, Brent, Harrow, Westminster and Luton will be asked to provide the chief investigator with a list of community pharmacies located in their areas based on the inclusion criteria.

The inclusion criteria include: (a) pharmacies located in areas which have a population diverse in age, socio-economic characteristics and presence of Asian and Middle Eastern groups and; (b) pharmacies conducting Medicine Use Review (MUR), and thus having a private consultation room. This is to allow the semi-structured interview to take place, in a quiet and peacefully environment.

From the list obtained, all those eligible will be invited to take part in the study by sending an invitation letter and a summary of the research study. A reply slip with pre-paid envelope will be included.

The aim of this study is to recruit 15 community pharmacy sites. The community pharmacy sites recruited will be contacted by the chief investigator to arrange recruitment process of patients.

To encourage a positive participation and to thank pharmacists for their time and effort to recruit patients, fifty pound voucher will be given to those who will participate in the study.

Recruitment of Patients:

The community pharmacists will invite eligible patients to take part in the study and if they agree, they will be referred to the chief investigator who will provide a full explanation of the study and take informed (written) consent prior to commencing the interview.

Eligibility Criteria

Patients will be recruited based on inclusion and exclusion criteria as follows:

Inclusion Criteria:
Patients whose ancestry is from Asian or Middle Eastern background, irrespective of their place of birth. Asian background include Indian, Pakistani, Bangladeshi or any other Asian background whereas Middle Eastern background include Arabs, Iranian, Turkish or any other Middle Eastern background. Patient will be identified visual inspection of forename and surname together and ethnic identity will be confirmed by the patient later on.

Patients on multiple medicines (i.e. 3 or more prescribed medicines).

Willing to take part and informed consent.

Over 18 years old (no parental consent required).

Patients who speak the following languages: English or Arabic. Those who cannot speak any of these languages will also be included through utilising routine practice used by community pharmacists who provide services for Asian and Middle Eastern patients who do not speak English. This may involve a community pharmacist or other pharmacy staff who assists in communicating with the patient during the interview. Where translation or interpretation is required, the interviews will be validated by the research team which include speakers of Arabic, Farsi, Panjabi, Hindi and Urdu.

Exclusion criteria:

Patients who are considered by community pharmacists to be too unwell.

Patients who do have a clear language barrier.

Patients recruitment will be carried out by two methods in each pharmacy and any of these methods will be used to recruit an average number of 20 patients per pharmacy. These methods are:

1. **Reviewing Medicine Use Review (MUR) reports and Patient Medication Records (PMRs).** The community pharmacists will do a retrospective review of MUR reports and PMRs over the last 6 months to identify eligible patients. The community pharmacists will approach and invite the patients by telephone and each patient will be provided with a prepared information pack which will include a patient information sheet, reply slip and pre-paid envelope.

2. **Direct approach.** The community pharmacists will approach eligible patients directly when they come to the pharmacy (e.g. for a prescription, OTC, consultation) and invite them to take part. Each patient will be provided with a prepared information pack which will include a patient information sheet, reply slip and pre-paid envelope.
If patients would like to take part, they will be requested to return the reply slip in the pre-paid envelope provided to the chief investigator address or alternatively if they prefer further information, they can email or phone the chief investigator.

Patients, who have returned the reply slip, will be contacted by the chief investigator and a date and time will be arranged for the semi-structured interview. The semi-structured interview will take place in the community pharmacy consultation room for 45 minutes and will be conducted by the chief investigator. Informed (written) consent will be taken by the chief investigator prior commencing the interview.

Flow chart of the design of the main study is illustrated below.
Appendix 10: A letter to thank pharmacist for taking part in the study.

Thank You Letter

Title of research: Medicine use issues experienced by South Asian and Middle Eastern patients.

Dear Mr. X,

I am writing to express my sincere gratitude to you for agreeing to take part in this study. I will be in touch with you again at the beginning of May to arrange a visit to the pharmacy.

Thank you again for your participation and collaboration. Please do not hesitate to contact me if you have any questions on:

Faten Alhomoud (Chief Investigator)
Centre for Pharmacy Practice, the School of Pharmacy, University College London,
Mezzanine Floor, BMA House,
Tavistock Square, London WC1H 9JP
Tel: 020 7874 1290, Mobile: 07955367688
E-mail: faten.alhomoud.11@ucl.ac.uk
Appendix 11: Patient invitation letter.

Patient Invitation Letter
Title of research: Medicine use issues experienced by South Asian and Middle Eastern patients

Dear Sir or Madam,
I would like to invite you to participate in a research study that is seeking the views of Asian and Middle Eastern patients on their use of medicines.

Before you decide to take part, it is important that you understand why this study is being done and what it will involve. Thus, please read the Patient Information Sheet carefully discusses it with others if you wish.

If you are interested to take part in the study, please return the reply slip in the pre-paid envelope provided to the chief investigator’s address below or alternatively if you prefer further information, you can email or phone the chief investigator.

Kind regards,
Faten Alhomoud (Chief Investigator)
Centre for Pharmacy Practice, the School of Pharmacy, University College London,
Mezzanine Floor, BMA House,
Tavistock Square, London WC1H 9JP
Tel: 020 7874 1290, Mobile: 07955367688
E-mail: faten.alhomoud.11@ucl.ac.uk
Appendix 12: Patient information sheet.

The Patient Information Sheet

Title of research: Medicine use issues experienced by South Asian and Middle Eastern patients.

Who Am I?

I am Fatem Alhomoud, a Ph.D. student at the UCL School of Pharmacy.

What is the purpose of this study?

We would like to increase our knowledge of (1) how people use their medicine, (2) what issues or problems people may have with their medicines, and (3) how their problems can be resolved.

Why have I been chosen?

You are being invited to participate in this study because (1) you are from South Asian or Middle Eastern background, (2) you have a chronic disease, and because (3) there is very limited research and information available on this area and we believe that this study will help plan future medicine services.

Do I have to take part?

This is entirely your choice to take part in this study and if you agree to participate in this study you would be asked to read the provided information sheet and return the reply slip in the pre-paid envelope provided to the chief investigator’s address. You can withdraw at any time from this study.

What will I be asked to do if I take part?

You will be invited for an interview with a researcher which will take place at your pharmacy for about 45 minutes. In the interview, you will be asked some questions about your medicines and anything related to your medicine (how you obtain and use them and if you have any problems). The interview will be audio recorded but only with your permission. With your permission, medication records held in your pharmacy will also be looked at as part of this study.

What are the possible advantages of taking part?

There may not be any direct benefit to you but this project will provide information to improve medicine use services to better suit the needs of patients in the future. If any issues or concerns are raised you will be able to speak to a community pharmacist at the end of the interview.

What are the possible disadvantages of participating in this study?

There are no disadvantages or risks from taking part in this study.

Is the study confidential and what will happen to the result of this study?

All the information that you will provide or any other information we may obtain about your medicines from your pharmacy records will be treated as strictly confidential. The information you provide will be made anonymous by removing your personal details. This
means that you will not be identified in any report or publication that is produced about the study.

The results of the study will be reported as a part of a thesis and may also be published in professional journals. If you would like a copy of the report or papers, please ask the chief investigator, Faten Alhoud.

**What if something goes wrong?**

If you have concerns or complaints about any aspect of the way you have been approached or treated during the course of this study you may wish to contact:

**Professor Felicity Smith (Professor of Pharmacy Practice)**
School of Pharmacy, University College London
BMA House [Entrance A], Mezzanine, Tavistock Square,
London, WC1H 5IP
Tel: 020 7874 1288, E-mail: f.j.smith@ucl.ac.uk

Thank you for considering taking part in this research. We hope that you help us by your participation in order to anticipate a successful project.
Appendix 13: Patient consent form.

**Patient Consent Form**

**Title of research:** Medicine Use issues experienced by South Asian and Middle Eastern patients.

**Name of the chief investigator:** Faten Alhomoud

<table>
<thead>
<tr>
<th>To be signed by patient</th>
<th>Please tick</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I have read and understood the patient information sheet for the above study and I have had chance to ask questions</td>
<td>YES  NO</td>
</tr>
<tr>
<td>2. I am aware that my participation is voluntary and that I am free to stop taking part at any time.</td>
<td>YES  NO</td>
</tr>
<tr>
<td>3. I give permission for any of my concerns to be passed on to the community pharmacist or the GP.</td>
<td>YES  NO</td>
</tr>
<tr>
<td>4. I understand that the study may involve seeking medical information and personal views and that these views will be used in the study.</td>
<td>YES  NO</td>
</tr>
<tr>
<td>5. I am aware that the interview may be audio recorded but only with my permission.</td>
<td>YES  NO</td>
</tr>
<tr>
<td>6. I agree to take part in this study.</td>
<td>YES  NO</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of patient</th>
<th>Date</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of researcher</th>
<th>Date</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Medicine related problems</th>
<th>Service related problems</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interactions</strong></td>
<td><strong>Drug-prescribing problems</strong></td>
</tr>
<tr>
<td>Type A ADR – side effect known</td>
<td>Drug missing from regime</td>
</tr>
<tr>
<td>Type B ADR – hypersensitivity</td>
<td>Therapeutic duplication</td>
</tr>
<tr>
<td>Drug-drug interaction</td>
<td>Use of drug to treat adverse effect of another</td>
</tr>
<tr>
<td>Drug-disease interaction</td>
<td>Inappropriate dose (too high or low)</td>
</tr>
<tr>
<td>Drug-laboratory test interaction</td>
<td>No directions given for medicines</td>
</tr>
<tr>
<td>Drug-food interaction</td>
<td><strong>Interface, monitoring and review</strong></td>
</tr>
<tr>
<td><strong>Intentional non-compliance</strong></td>
<td>Inadequate monitoring or review (identify by researcher)</td>
</tr>
<tr>
<td>Under-use of POMs</td>
<td>Inadequate monitoring or review (identify by patient)</td>
</tr>
<tr>
<td>Over-use of POMs</td>
<td>Inadequate transfer of information from hospital to GP</td>
</tr>
<tr>
<td>Duplication of POMs</td>
<td><strong>Lack of information or discussion</strong></td>
</tr>
<tr>
<td>Mixing different preparations in the same container</td>
<td>Inadequate information on medicines</td>
</tr>
<tr>
<td>Use of expired medicines</td>
<td>Inadequate information on illness</td>
</tr>
<tr>
<td>Inappropriate storage of medicines</td>
<td>Inadequate discussion with doctors/nurses/pharmacists/hospital staff</td>
</tr>
<tr>
<td>Unsure of dosing</td>
<td><strong>Problems with repeat prescriptions</strong></td>
</tr>
<tr>
<td>Stopped taking medicines</td>
<td>Poorly synchronised quantities of repeats</td>
</tr>
<tr>
<td><strong>Cognitive, physical and sensory problems</strong></td>
<td>Over-ordering and stored at home (hoarding)</td>
</tr>
<tr>
<td>Forgetting to take medicines</td>
<td>Ran out of medicine and did not order anymore</td>
</tr>
<tr>
<td>Difficulty opening containers/packs</td>
<td>Medicines no longer used remain on form</td>
</tr>
<tr>
<td>Difficulty reading labels</td>
<td>Renew once only medicine</td>
</tr>
<tr>
<td>Difficulty hearing instructions</td>
<td>Delay renewals after supplies run out</td>
</tr>
<tr>
<td><strong>Problems with non-prescription medicines</strong></td>
<td>Old medicines remain on form</td>
</tr>
<tr>
<td>Over-use</td>
<td><strong>GP surgery and pharmacy service problems</strong></td>
</tr>
<tr>
<td>Interaction with POMs</td>
<td>Difficulty getting appointments to see GP</td>
</tr>
<tr>
<td>Contra-indication</td>
<td>Long waiting times in GP surgery</td>
</tr>
<tr>
<td>Use of expired medicines</td>
<td>Difficulty consulting the practice nurse</td>
</tr>
<tr>
<td></td>
<td>Difficulty consulting the pharmacist</td>
</tr>
</tbody>
</table>
Appendix 15: Research Ethics Committee (REC) application form.

<table>
<thead>
<tr>
<th>NHS REC Form</th>
<th>Reference: 11/LO/1391</th>
<th>IRAS Version 3.1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Welcome to the Integrated Research Application System</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>IRAS Project Filter</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The integrated dataset required for your project will be created from the answers you give to the following questions. The system will generate only those questions and sessions which (a) apply to your study type and (b) are required by the bodies reviewing your study. Please ensure you answer all the questions before proceeding with your applications.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| **Please enter a short title for this project** (maximum 70 characters)  
Medicine Related Problems experienced by Ethnic Minority Populations |
| **1. Is your project research?** |
| ☐ Yes ☐ No |
| **2. Select one category from the list below:** |
| ☐ Clinical trial of an investigational medicinal product  
☐ Clinical investigation or other study of a medical device  
☐ Combined trial of an investigational medicinal product and an investigational medical device  
☐ Other clinical trial or clinical investigation  
☐ Study administering questionnaires/interviews for quantitative analysis, or using mixed quantitative/qualitative methodology  
☐ Study involving qualitative methods only  
☐ Study limited to working with human tissue samples, other human biological samples and/or data (specific projects only)  
☐ Research tissue bank  
☐ Research database |
| If your work does not fit any of these categories, select the option below: |
| ☐ Other study |
| **2a. Please answer the following question(s):** |
| a) Does the study involve the use of any ionising radiation? ☐ Yes ☐ No |
| b) Will you be taking new human tissue samples (or other human biological samples)? ☐ Yes ☐ No |
| c) Will you be using existing human tissue samples (or other human biological samples)? ☐ Yes ☐ No |
| **3. In which countries of the UK will the research sites be located? (Tick all that apply)** |
| ☑ England  
☐ Scotland  
☐ Wales  
☐ Northern Ireland |
| **3a. In which country of the UK will the lead NHS R&D office be located:** |
| ☑ England  
☐ Scotland |

Date: 06/08/2011  1  84253/236869/1/110
4. Which review bodies are you applying to?
- NHS/HSC Research and Development office
- Social Care Research Ethics Committee
- Research Ethics Committee
- National Information Governance Board for Health and Social Care (NIGB)
- Ministry of Justice (MoJ)
- National Offender Management Service (NOMS) (Prisons & Probation)

5. Will any research sites in this study be NHS organisations?
- Yes
- No

6. Do you want your NHS R&D application(s) to be processed through the NIHR Coordinated System for gaining NHS permission?
- Yes
- No

If yes, you must complete and submit the NIHR CSP Application Form immediately after completing this project file, before proceeding with completing and submitting other applications.

7. Do you plan at any stage of the project to undertake intrusive research involving adults lacking capacity to consent for themselves?
- Yes
- No

Answer: Yes if you plan to recruit participants aged 16 or over who lack capacity, or to retain them in the study following loss of capacity. Intrusive research means any research requiring consent in law. This includes use of identifiable tissue samples or personal information, except where application is being made to the NIGB Ethics and Confidentiality Committee to set aside the common law duty of confidentiality in England and Wales. Please consult the guidance notes for further information on the legal frameworks for research involving adults lacking capacity in the UK.

8. Do you plan to include any participants who are prisoners or young offenders in the custody of HM Prison Service or who are offenders supervised by the probation service in England or Wales?
- Yes
- No

9. Is the study, or any part of the study, being undertaken as an educational project?
- Yes
- No

9a. Is the project being undertaken in part fulfilment of a PhD or other doctorate?
- Yes
- No

10. Will this research be financially supported by the United States Department of Health and Human Services or any of its agencies?

Date: 09/08/2011
11. Will identifiable patient data be accessed outside the clinical care team without prior consent at any stage of the project (including identification of potential participants)?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Integrated Research Application System
Application Form for Research administering questionnaires/interviews for quantitative analysis or mixed methodology study

Application to NHS/HSC Research Ethics Committee

The Chief Investigator should complete this form. Guidance on the questions is available wherever you see this symbol displayed. We recommend reading the guidance first. The complete guidance and a glossary are available by selecting Help.

Please define any terms or acronyms that might not be familiar to lay reviewers of the application.

Short title and version number: (maximum 70 characters - this will be inserted as header on all forms)
Medicine Related Problems experienced by Ethnic Minority Populations

Please complete these details after you have booked the REC application for review.

REC Name:
London - City and East

REC Reference Number: 11/LO/1391
Submission date: 08/08/2011

PART A: Core study information

1. ADMINISTRATIVE DETAILS

A1. Full title of the research:
Medicine Use and Medicine Related Problems experienced by Ethnic Minority Patients with Chronic Diseases in Primary Care

A2-1. Educational projects
Name and contact details of student(s):

Student 1

Title: 
Forename/Initials: Miss Faten
Surname: Alhomoud

Address: Department of Practice and Policy, School of Pharmacy, University of London
Entrance A, Mezzanine Floor, British Medical Association (BMA)/Tavistock House
Tavistock Square, London

Post Code: WC1H 9JP
E-mail: faten.alhomoud@live.pharmacy.ac.uk
Telephone: 07965367688

Date: 08/08/2011
Fax

Give details of the educational course or degree for which this research is being undertaken:

Name and level of course/degree:
PhD

Name of educational establishment:
The School of Pharmacy, University of London

Name and contact details of academic supervisor(s):

<table>
<thead>
<tr>
<th>Academic supervisor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title Forename/Initials Surname</td>
</tr>
<tr>
<td>Dr. Zoe Aslanpour</td>
</tr>
<tr>
<td>Address</td>
</tr>
<tr>
<td>School of Pharmacy, University of Hertfordshire</td>
</tr>
<tr>
<td>College Lane Campus</td>
</tr>
<tr>
<td>Hatfield, Herts</td>
</tr>
<tr>
<td>Post Code</td>
</tr>
<tr>
<td>AL10 9AB</td>
</tr>
<tr>
<td>E-mail</td>
</tr>
<tr>
<td><a href="mailto:Z.Aslanpour@herts.ac.uk">Z.Aslanpour@herts.ac.uk</a></td>
</tr>
<tr>
<td>Telephone</td>
</tr>
<tr>
<td>01707284553</td>
</tr>
<tr>
<td>Fax</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Academic supervisor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title Forename/Initials Surname</td>
</tr>
<tr>
<td>Professor Soraya Dhillon</td>
</tr>
<tr>
<td>Address</td>
</tr>
<tr>
<td>School of Pharmacy, University of Hertfordshire</td>
</tr>
<tr>
<td>College Lane Campus</td>
</tr>
<tr>
<td>Hatfield, Herts</td>
</tr>
<tr>
<td>Post Code</td>
</tr>
<tr>
<td>AL10 9AB</td>
</tr>
<tr>
<td>E-mail</td>
</tr>
<tr>
<td><a href="mailto:s.dhillon@herts.ac.uk">s.dhillon@herts.ac.uk</a></td>
</tr>
<tr>
<td>Telephone</td>
</tr>
<tr>
<td>01707286106</td>
</tr>
<tr>
<td>Fax</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Academic supervisor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title Forename/Initials Surname</td>
</tr>
<tr>
<td>Professor Felicity Smith</td>
</tr>
<tr>
<td>Address</td>
</tr>
<tr>
<td>Department of Practice and Policy, School of Pharmacy, University of London</td>
</tr>
<tr>
<td>Entrance A, Mezzanine Floor, British Medical Association (BMA)Tavistock House</td>
</tr>
<tr>
<td>Tavistock Square, London</td>
</tr>
<tr>
<td>Post Code</td>
</tr>
<tr>
<td>WC1H 9JP</td>
</tr>
<tr>
<td>E-mail</td>
</tr>
<tr>
<td><a href="mailto:felicity.smith@pharmacy.ac.uk">felicity.smith@pharmacy.ac.uk</a></td>
</tr>
<tr>
<td>Telephone</td>
</tr>
<tr>
<td>02078741288</td>
</tr>
<tr>
<td>Fax</td>
</tr>
<tr>
<td>0207875893</td>
</tr>
</tbody>
</table>

Please state which academic supervisor(s) has responsibility for which student(s):
Please click "Save now" before completing this table. This will ensure that all of the student and academic supervisor details are shown correctly.

<table>
<thead>
<tr>
<th>Student(s)</th>
<th>Academic supervisor(s)</th>
</tr>
</thead>
</table>

Date: 09/08/2011
Student 1 Miss Faten Alhomoud

Dr. Zoe Aslani
Professor Scurrya Dhillon
Professor Felicity Smith

A copy of a current CV for the student and the academic supervisor (maximum 2 pages of A4) must be submitted with the application.

A2.2. Who will act as Chief Investigator for this study?

☒ Student
☐ Academic supervisor
☐ Other

A3.1. Chief Investigator:

Title Forename/Initials Surname
Miss Faten Alhomoud

Post Department of Practice and Policy, School of Pharmacy, University of London

Qualifications MSc in Clinical Pharmacy and BSc in Pharmacy

Employer Department of Practice and Policy, School of Pharmacy, University of London

Work Address Entrance A, Mezzanine Floor, British Medical Association (BMA)/Tavistock House

Tavistock Square, London

Post Code WC1H 9JP

Work E-mail faten.alhomoud@lve.pharmacy.ac.uk

* Personal E-mail f.k.alhomoud@gmail.com

Work Telephone 07955367688

* Personal Telephone/Mobile 07955367688

Fax

* This information is optional. It will not be placed in the public domain or disclosed to any other third party without prior consent.

A copy of a current CV (maximum 2 pages of A4) for the Chief Investigator must be submitted with the application.

A4. Who is the contact on behalf of the sponsor for all correspondence relating to applications for this project?

This contact will receive copies of all correspondence from REC and R&D reviewers that is sent to the CI.

Title Forename/Initials Surname
Miss Faten Alhomoud

Address The Department of Practice and Policy, School of Pharmacy, University of London

Entrance A, Mezzanine Floor, British Medical Association (BMA) House

Tavistock Square, London

Post Code WC1H 9JP

E-mail faten.alhomoud@lve.pharmacy.ac.uk

Telephone 07955367688

Fax

Date: 09/08/2011
A5-1. Research reference numbers. Please give any relevant references for your study:

Applicant's/organisation's own reference number, e.g. R & D (if available): N/A
Sponsor's/protocol number: N/A
Protocol Version: 1
Protocol Date: 10/06/2011
Funder's reference number: V1/10062011

International Standard Randomised Controlled Trial Number (ISRCTN):
ClinicalTrials.gov Identifier (NCT number):
European Clinical Trials Database (EudraCT) number:
Project website: N/A

Ref. Number Description Reference Number
Protocol version 1, dated 10 June 2011 V1/10062011

A5-2. Is this application linked to a previous study or another current application?

☐ Yes ☐ No

Please give brief details and reference numbers.

2. OVERVIEW OF THE RESEARCH

To provide all the information required by review bodies and research information systems, we ask a number of specific questions. This section invites you to give an overview using language comprehensible to lay reviewers and members of the public. Please read the guidance notes for advice on this section.

A6-1. Summary of the study. Please provide a brief summary of the research (maximum 300 words) using language easily understood by lay reviewers and members of the public. This summary will be published on the website of the National Research Ethics Service following the ethical review.

Medicine-related problems (MRPs) have been identified in various sectors of healthcare, some of these problems include Adverse Drug Reactions (ADRs) and drug interactions, unwanted side effects, treatment failure, non-adherence, patients' issues such as cognitive, physical and sensory problems and problems with access to services. (Horne et al., 1995; Johnson et al., 1997; Winterstein et al., 2002; Paulino et al., 2004; Gordon et al., 2005; Szczepyra, 2005; Gordon et al., 2007; Krähenbühl et al., 2008). According to the literature, the frequency of MRPs in the community is between 2.5 - 65% of patients (Paulino et al., 2004; Gordon et al., 2005; Szczepyra, 2005; Gordon et al., 2007; Krähenbühl et al., 2008). Conversely, the frequency of MRPs identified in the hospital setting is between 2.5 - 30% of patients (Horne et al., 1995; Johnson et al., 1997; Winterstein et al., 2002), MRPs, detected in both in hospital and community settings, are responsible for morbidity, mortality, (Busjard et al., 2001; Mannheimer et al., 2006; Vikill et al., 2006), reduce the quality of life (Ernst et al., 2002; Vikill et al., 2006) and increase health expenses for patient and for society due to subsequent morbidity, extra general practitioner (GP) consultations and hospital admissions (Gordon et al., 2005; Mannheimer et al., 2006; Vikill et al., 2006). Evaluating MRPs and their causes may offer a much needed new approach to support their reduction, given that a high percentage of these problems have been considered preventable (Winterstein et al., 2002). An understanding of context of MRPs from patient's perspective is essential in order to identify how patients may be supported in the use of their medicines.

Aim: the aim of this study is to identify and evaluate MRPs experienced by Asian and Middle Eastern patients in primary care and to identify how patients may be supported in the use of their medicines.

Setting: Community pharmacies and patients' homes in the following in the areas: Islington, Brent, Harrow and Bedfordshire.

Method: This is an in-depth study that will take a mixed (quantitative and qualitative) approach to examine medicine related problems in Asian and Middle Eastern patients with chronic diseases in primary care. An anticipated number of up to 200 patients will be interviewed by the chief investigator to identify potential MRPs and their causes. Two validated instruments will be used as well as an agreed interview schedule to identify MRPs using semi-structured interviews.

Date: 08/08/2011
A9-2. Summary of main issues. Please summarise the main ethical and design issues arising from the study and say how you have addressed them.

- A clear outline of the study will be provided to all eligible patients who wish to participate. This outline will include the purpose of the study, other individuals from whom relevant information may be obtained, and how data will be collected, anonymised, analysed and disseminated.
- Informed written consent will be obtained prior to commencing the face-to-face semi-structured interview. The patients will be reminded that they can withdraw from the study at any time without providing a reason.
- The interview will be audio-taped with participant's authorisation. For participants who decline to an audio taped interview, only chief investigator field notes will be taken.
- The Data Protection Act 1998 directs the framework governing the processing of information that identifies living individual's personal data in data protection terms. Processing information includes; obtaining, recording, holding, disclosing and using of information. The act also applies to all forms of media, paper and images and confidential information such as personal records. The data protection puts limitations on processing personal information with regards to living individuals. There are eight principals about data handling. In the context of confidentiality, the most important principals are; processing to be lawful and fair, personal data to be processed for limited purposes, not kept for longer than necessary and secure.
- Data protection legislation will be complied with. The data collected will be handled with confidentiality throughout the study period and kept in a coded format without the name of the patients and locked all the time in a designated cabinet for this purpose. Data will be stored in the University of London (School of Pharmacy) computers where all files will be password protected and only the research team will be allowed access. Storage will be the responsibility of Prof. Felicity Smith. Data will be stored for more five years and will be destroyed at the end of the study period.
- Ethical approval has been sought from the University of Hertfordshire Ethical Committee. The main ethical concerns for participants in this study will be around informed consent and the confidentiality and anonymity of personal data. Personal data to be collected will include demographic data, medical histories, medication history from patients and pharmacies. Other information will also include patients' personal views on MRP's and the healthcare facilities available.
- During the course of this study, patients identified with a MRP will be encouraged to seek assistance from the appropriate Healthcare professional (HCP) such as their GP, regular pharmacist or practice nurse. Where a significant patient safety issue arises, in the capacity of the CI's obligation as a pharmacist, this will be feed back to the appropriate HCP with the patient's consent and permission.
- Any information that is obtained from the patients or the patients' records from the pharmacies will be anonymised and treated as confidential information. All personal data held on computers or recorded will be anonymised and coded. The Word files on the computer will be password protected and transcripts stored in locked cabinets when not in use. Data collected will be destroyed according to the University of London policy.

A10. What is the principal research question/objective? Please put this in language comprehensible to a lay person.

What are the types and causes of medicine-related problems (MRPs) experienced by Asians and Middle Eastern populations with chronic diseases?

A11. What are the secondary research questions/objectives if applicable? Please put this in language comprehensible to a lay person.

What resolution strategies can be employed to minimise the occurrence of MRPs?

A12. What is the scientific justification for the research? Please put this in language comprehensible to a lay person.

The ethnic minority populations in the UK are growing substantially as a consequence of continued immigration and high birth rate. In 2001, according to the Census, about 7.6% of the population in the United Kingdom were of black and ethnic minority origin (ONS, 2004). This number is higher than the one in 1991 estimated by nearly 2%. The proportion of black and other ethnic minorities is expected to rise from 8% of the population, as recorded in the 2001 census, to 27% by 2031 and to 43% by 2056 (Coleman, 2010). Nearly half (48%) of the total ethnic minority population lives in the London region, where they comprised 29% of all residents (ONS, 2004). By 2031, 39% of London's population is projected to be from an ethnic minority group (GLA, 2010). This compares with 32 per cent in 2000 and 29 per cent in 2001 (GLA, 2010).

Date: 08/04/2011
The Office for National Statistics (ONS) has defined ethnic minority groups as "a collectively within a larger population having real or putative common ancestry, memories of a shared past, and a cultural focus upon one or more symbolic elements which define the group’s identity, such as kinship, ancestry, history, religion, language, shared territory, nationality or physical appearance." (ONS, 2002). Ethnic Minority groups include Indians, Pakistanis, Bangladeshis, British-Asian, Other-Asian, Black-Caribbeans, Black-Africans, Black-British, Black-Other, Chinese, 'Mixed' and 'Other' groups (ONS, 2003; ONS, 2004).

People from ethnic minorities tend to perceive themselves as less healthy than those in the general UK population (NHS, 2005). For example, about one in seven Bangladeshi men (15%), and one in ten Pakistani men (10%), reported ‘bad’ or ‘very bad’ health. Similarly, around one in seven Bangladeshi and Pakistani women reported bad/very bad health (14% and 15% respectively). Ethnic Minority populations also have a higher prevalence of chronic diseases including diabetes, cardiovascular disease (CVD), mental health, rheumatoid and respiratory disease (Memon et al., 2002). For example, those from South Asian communities have high rates of heart disease and non-insulin dependent (type 2) diabetes occurring at an earlier age and being associated with premature and high mortality (Barnett et al., 2006; Ghosep et al., 2011). The South Asian community suffers from a four to six fold increased prevalence of Type 2 Diabetes Mellitus (T2DM) (Barnett et al., 2006). South Asians also suffer from a high rate of ischaemic heart disease (IHD) including myocardial infarction and angina. For example, South Asian men have shown a 30-40% higher prevalence of ischaemic heart disease than men in the general population (Barnett et al., 2006).

Treatment for these conditions can often be complex, having a range of medicines to manage their condition and frequently lead to medicine-related problems (MRPs), many studies have found that patients do not manage their medicines effectively (Claesson et al., 1995, Granas and Bates, 1999, Hammarlein et al., 2007, Kühnethbühl et al., 2008). The definitions of MRP are wide and could be all sorts of problems ranging from the prescribing process through to obtaining supplies, monitoring for appropriateness and patient behaviours which influence their use. In addition, patients may also feel unable to communicate their needs to healthcare professionals, a problem exacerbated by short (perceived or actual) consultation times (Barry et al., 2009).

A medicine related problem has been defined as "an event or circumstance involving drug treatment that actually or potentially interferes with the patient's experiencing an optimum outcome of medical care" (Hepler and Strand, 1990) or as "any problem experienced by a patient that may impact on their ability to manage or take their medicines effectively" (Gordon et al., 2005). The last definition by Gordon et al. is a broad definition of MRPs and focuses on the patient’s experience and perspective. MRPs include Adverse Drug Reactions (ADRs) and drug interactions, unwanted side-effects, treatment failure, non-adherence and patients factors such as cognitive, physical and sensory problems and problems with access to services.

Medicine-related problems have been identified in various healthcare settings and the experience of this phenomenon is global. The frequency of MRPs in the community, reported in the literature, is between 2.5 - 65% including prescribing errors (Gordon et al., 2005; Gordon et al., 2007), uncertainty and lack of knowledge about medicines (Paulino et al., 2004; Kühnethbühl et al., 2008), difficulty with managing side-effects (Paulino et al., 2004; Kühnethbühl et al., 2008), problems with access to services, difficulty with administration of medicines due to disability or problems related to understanding of information supplied with medication (Szczepura, 2005; Gordon et al., 2007). Conversely, the frequency of MRPs in the hospital setting was reported between 2.5 – 30% which includes inappropriate prescribing, non-adherence, inadequate monitoring that leads to treatment failure, adverse drug reactions or side-effects (Horne et al., 1998; Johnson et al., 1997; Wintersrni et al., 2002). The variation found between studies may result from differences in the study settings (e.g. primary or secondary care), population groups, sampling procedures or study methodology. For instance, there is a range of definitions associated with MRPs which range from narrow clinical definitions to more holistic approaches that address the contexts in which problems arise. Variation can also be seen in data sources and methods of data-collection such as using self-reported patient interviews. It has been found that MRPs have been responsible for morbidity, mortality in both hospital and community settings (Buuljord et al., 2001; Mannheimer et al., 2008; Vältl et al., 2006), reduce the quality of life (Emst et al., 2003; Vältl et al., 2006) and increase health expenses for patient and the government associated with a rise in morbidity, extra general practitioner (GP) consultations and hospital admissions (Gordon et al., 2005; Mannheimer et al., 2008; Vältl et al., 2006). There has been an increasing awareness that ethnic minority patients are one of the vulnerable groups who may experience medicine-related problems ranging from: patients not understanding how to take their medicines, cultural beliefs towards their health condition which could lead to non-adherence to medicines, adverse drug reactions and administration problems, language barriers, literacy differences, not knowing how to obtain a further supply and problems in access of health care services (Szczepura, 2005; Gordon et al., 2007; Siddi et al. 2009; Opera et al., 2010).

The role of patients and healthcare professionals is vital to achieve effective chronic disease management and to reduce MRPs. For example, the government has some drivers in place such as the “Expert Patients Programme” which was established following the recognition that patients often have more knowledge than their clinicians about their own conditions and thus making patients play a bigger part in managing their own condition (DoH, 2001). This was seen as an opportunity to put to good use the knowledge and experience of the patient effectively and thus give them more confidence and empowerment to manage chronic diseases. Results so far include a decrease in GP consultations, outpatient visits, accident and emergency attendance (DoH, 2004). Health care professionals also have
an important role in chronic disease management via effective medicine management. This includes evidence based and appropriate prescribing, adequate monitoring, improve patient compliance, improve communication and provision of sufficient patient information, patient education, and regular review of systems and process. For example, involvement of pharmacists in the medication review process has been tested in a number of randomised controlled trials and the results have been positive especially regarding the identification or the resolution of MRPs (Kesht et al., 2001), reduction in prescribing costs (Zemansky et al., 2001) and number of drugs prescribed (Holland et al., 2007), improving patients knowledge with regards to their medication and adherence patterns (Holland et al., 2007). It must however be noted that these pharmacists had specific training, full access to all relevant resources and information.

Generally, it can be said that ethnic groups are associated with cultural traits and health profiles that presents a challenge to health care practitioners and policy makers in terms of achieving equitable access hence presenting a difficult in identifying and resolving MRPs (Szczepura A, 2005). Bridging the health gap for individuals in these populations is now an important priority especially when it comes to identification and resolving MRPs, increasing life expectancy and the number of years of freedom from illness. However, very little is known on what the influences the MRPs among the ethnic minority populations. Additionally, majority of studies conducted to identify and resolve MRPs have been from a clinical perspective and examined patients of all ages or focused on elderly population but none were focused on ethnic minority groups (Zemansky et al. 2001; Pessarelli et al., 2005; Gallagher et al., 2007). Moreover, patients’ views and experiences were the focus in only small number of studies (Paulino et al., 2004; Haugbelle and Sørensen, 2006) and were usually restricted to compliance issues (Schneider et al., 1996; Glynne et al., 1996). As whole studies have not examined in detail the problems arising from the patient’s use of health services which may also ultimately influence their ability to manage their medicines effectively.

For the reasons discussed earlier there is potential for more to be done to reduce MRPs in ethnic minority groups and improve elements of the services made available in preventing co-morbidity. Also, promote access to services which in the long run may help prevent unnecessary hospital admissions, re-admissions and bridge the gap between services available to patients in primary and secondary care. It is essential to acknowledge, understand and address ethnic minority patients’ experience and views regarding MRPs so can support them on the appropriate use of medicines. Thus, the aim of this study is to identify and evaluate MRPs experienced by Asian and Middle Eastern patients in primary care and to identify how patients may be supported in the use of their medicines. The study will give a better insight on the problems the Asian and Middle Eastern minority groups are facing in regards to managing their medicines. The study will provide valuable information to the HCPs to strengthen their ability to deliver routine healthcare services.

The reason behind focusing on Asian groups in particular is because between 2000 and 2031 the largest percentage of ethnic minority groups increases are projected to be in the Chinese, Bangladeshi and Pakistani ethnic groups, which will increase by 65 per cent, 51 per cent and 96 per cent respectively (GLA, 2010). In fact during the same period, the highest increase of Ethnic Minority groups is projected to be in the ‘Other’ ethnic group by 79% (GLA, 2010). The ‘Other’ ethnic category in the Census form was not broken down to determine which specific ethnic groups it includes and also there was no tick-box for the Middle Eastern groups in the Census form; therefore, it is more likely that the Middle Eastern groups fall into the ‘Other’ category especially because of political instability in the Middle-East which increases percentage of immigration to the UK among these groups. There is also a further reason behind choosing Middle Eastern groups which is because these groups are new to the British society and very little are known on what influence the Medicine related problems among these groups. Asian groups in this study include Indian, Pakistan, Bangladeshis, Chinese and Other Asian whereas Middle Eastern groups include Arabs, Iranian, Turkish and Other Middle Eastern countries.

References

Date: 08/08/2011


Date: 08/08/2011

84253/238859/1/110
A13. Please summarise your design and methodology. It should be clear exactly what will happen to the research participant, how many times and in what order. Please complete this section in language comprehensible to the lay person. Do not simply reproduce or refer to the protocol. Further guidance is available in the guidance notes.

Study Aim
The aim of this study is to identify and evaluate MRPs experienced by Asian and Middle Eastern patients in primary care and to identify how patients may be supported in the use of their medicines.

Date: 08/08/2011 12 84253/238869/1/110
Study Objectives
1) To identify different types of medicine-related problems (MRPs) as well as to categorise the types of MRPs experienced by Asian and Middle Eastern patients and the medicines involved.
2) To identify factors causing medicine-related problems associated with Asian and Middle Eastern groups of patients.
3) To examine possible strategies on how to reduce the occurrence of future MRPs.

Methods
Study design
This is an in-depth study that will take a mixed (quantitative and qualitative) approach to examine medicine related problems in Asian and Middle Eastern patients with chronic diseases in primary care; the study will identify problems that these patients are facing in managing their condition and to identify medicine-related problems. The study will describe the issues from the perspective of the patients and in the context of their situations and circumstances. In order to assess MRPs from the patients' perspective, semi-structured interview tools will be employed including: Screening tool for identification of MRPs (Gordon et al., 2002), Morisky-8 items tool (Morisky et al., 2008) and an agreed interview schedule. Pharmacy records which include Patient Medication Records (PMRs) and Medicine Use review reports (MUR) will be reviewed to see whether more MRPs can be identified.

Study setting
Depending on patient’s wish, this study will be conducted either in community pharmacies or patients’ homes located in the following areas: Islington, Brent, Harrow, Luton and Bedfordshire.

Study participant and recruitment
I. Recruitment of Community pharmacies
- The sampling procedure for recruiting community pharmacies in this study is a purposive sample. This will be carried out by asking Islington Primary Care Trust (PCT), Brent PCT, Harrow PCT, Luton PCT and Bedfordshire PCT to provide the research student with a list of community pharmacies located in their areas based on the following inclusion criteria:
  □ Located in areas (wards) which have a population diverse in age and socio-economic characteristics and presence of Asian and Middle Eastern minority groups.
  □ Community pharmacies conducting Medicine Use Review (MUR), and thus having a private consultation room, allowing the semi-structured interview to take place, in a quiet and peaceful environment.
  □ Primary Care Trusts in Islington, Brent, Harrow, Luton and Bedfordshire were selected based on diversity of age group in the population, the proportion of the population belonging to ethnic minority groups (i.e. having a high percentage of ethnic minority populations than the national average) and diversity in terms of socio-economic status (according to the National Statistics Socio-Economic Classification (NS-SEC), which provides an indication of socio-economic position based on occupation) (ONS, 2010).
  □ From the list obtained, all the community pharmacies will be invited to take part in the study by sending an invitation letter addressed to each one of them. A sample of the invitation letter to the community pharmacists is attached as appendix 1.
  □ The invitation letter will include a brief description of the study’s aim and objectives, study procedures, how they will contribute and what they need to do. It will also include contact details of the research team and a reply slip with pre-paid envelope to return to the chief investigator. The community pharmacists can also email or phone the chief investigator if they wish to participate instead of sending the reply slip.
  □ Upon receiving the reply from community pharmacies expressing their willingness to take part in the study, the first 15 community pharmacies agree to take part will be contacted by the chief investigator in order to recruit patients.
  □ A letter will be sent by the chief investigator to the rest of the responding pharmacies to thank them for responding and inform them that the required number for recruiting community pharmacies is achieved.
  □ Flow chart of the design of the main study and Gantt chart are attached as appendices 2 and 3.

II. Recruitment of Patients
- A purposive sample of patients will be recruited based on inclusion, exclusion, and additional criteria as follows:
  Inclusion criteria:
  □ Being from Asian (i.e. Indian, Pakistani, Bangladeshi, Chinese or Other Asian) or Middle Eastern (i.e. Arab, Iranian, Turkish, or Other Middle Eastern) ethnic groups. This will be initially identified based on surname of patient and will be confirmed by the patient later on.
  □ Taking multiple medicines for Chronic Diseases (i.e. 3 or more prescribed medicines).
  □ Willing to take part and informed consent.
  □ Over 18 years old (no parental consent required).
  □ Languages to be spoken include [English, Arabic or Persian]. Patients who cannot speak any of these languages pending availability of a translator who support them in giving the written consent and participating in the interview.
  □ Translator could be any of the following: a family member, friend, carer or pharmacist who can act as a translator after seeking the patient’s permission.
Exclusion criteria:
  □ Patients who are resident in a nursing or residential home.

Date: 08/08/2011

411
Patients who have a terminal illness and under the care of Macmillan nurses.

Patients involved in another research.

Discontinuation criteria:

- Patients who withdraw from the study at any time after consenting.
- Patients who are unable to continue participating in the study due to significant deteriorating ill health or death.

- Patient’s recruitment will be carried out by three methods in each pharmacy and any of these methods will be used to recruit an average number of 20 patients per pharmacy. These methods include the following:

  1. Reviewing Medicine Use Review (MUR) reports: a retrospective review of MUR reports that have been conducted in the last 6 months will be carried out by community pharmacists to identify a list of patient’s name and address that match inclusion criteria. The patients who meet the inclusion criteria, will be invited by community pharmacist. MUR form is attached as appendix 4.

  2. Reviewing Patient Medication Records (PMRs): a retrospective review of patient medication records (PMRs) held in the pharmacy database for the last 6 months will be carried out by community pharmacists to identify a list of patient’s name and address that match inclusion criteria. The patients who meet the inclusion criteria, will be invited by community pharmacist.

  3. Direct approach through the community pharmacist: the patients who present at the community pharmacy to have a prescription dispensed and meet the inclusion criteria, will be directly approached and invited by community pharmacist in the pharmacy. The Chief investigator will also help community pharmacists in recruiting patients through direct approach. Once patient identified and informed of the study by pharmacy staff, potential participants will be referred to the chief investigator to invite them to take part. The chief investigator will discuss with patient only after having agreed to this with pharmacist. The chief investigator will be rotating through community pharmacies.

- All the identified patients will be invited to take part in the study by sending or giving in person an invitation letter and a prepared information pack explaining that the patient need to participate in a semi-structured interview.

- The information pack will consist of a patient information sheet explaining: the purpose of the study, study procedures and how it will be conducted, possible disadvantages and benefits from taking part, sponsorship and confidentiality of data and the chief investigator’s contact details. The information pack will also include a consent form, a pre-paid envelope with the chief investigator’s address and a photograph of the chief investigator so that the patients know who they will be expecting if they wish to take part in the study. Patient Invitation Letter, Patient Information Sheet and Patient Consent Form are attached as appendices 5, 6 and 7 respectively.

- The patients can also email or phone the chief investigator if they wish to take part instead of sending a reply slip.

  - Adequate time duration (i.e. 72 hours) will be given to the patients to consider whether they wish to take part in the study which they can do by returning the reply slip or sending an email or phoning the research student.

  - Patient, who express willingness to take part, will be contacted by the chief investigator and an agreed date, time and place will be arranged for the conduct of the semi-structured interview. An opportunity to ask questions will be provided.

  - If the patient is unable to speak English, Arabic or Persian, access to a translator will be sought after seeking the patient’s permission.

  - A written and signed consent form will be obtained by the chief investigator prior to commencing the semi-structured interview.

  - Follow-up letter will be sent to non-responders to remind them to take part. This will be done after three weeks of sending initial invitation letter and prepared information pack.

Sample size:

- A formal sample size calculation was carried out to indicate the required number of participants. The frequency of MRP’s in the community, reported in the literature, is between 2.5 - 65% (Gordon et al., 2005).

- In Gordon et al. Study (2005), 70% of patients agreed to participate in the screening in the pharmacies. Therefore, the formal sample size calculation for this study was carried out based on response rate of (70%) for the screening interviews (Gordon et al., 2005). The aim in this study will be to recruit an average number of 200 patients for semi-structured interview. This was done as follows:

  - The first 15 community pharmacies, that agree to take part in the study, will be recruited. Every pharmacy from 15 will be asked to recruit an average number of 20 patients using any of the three methods for patient’s recruitment. This will result in recruiting 300 patients for the semi-structured interview. Based on 70% response rate, around 200 (n=210) patients will be interviewed.

  - The sample size of 200 patients will yield adequate power of 85% to allow clinically significant differences to be statistically significant and to make sample size representative. The power of the sample size was calculated using the following formula:

    \[ \text{With a 95\% confidence interval (z=1.96) and interval no wider than 0.05 (m), \( P \) is the power and \( n \) is the sample size.} \]

Data Collection:

- After obtaining a patient’s informed (written) consent, an eligible patient will be interviewed in the community pharmacy by using two tools. The tools that will be used to identify MRP’s are ones that have been used in previous studies and have been validated. These validated tools include the following:

  - Screening tool for identification of medication-related problems (Gordon et al., 2005).

  - Morisky 8-items tool (Morisky et al., 2008).
An agreed interview schedule will also be used to concentrate in-depth on context of MRPs.
- The MRP screening tool, Morisky & items and an example of the agreed interview schedule are attached as appendices 8, 9 and 10 respectively.
- The semi-structured face-to-face interview will consist of two parts. The first part will involve administering the screening tool for MRPs (Gordon et al., 2005). The second part will involve administering the Morisky &-items tool and agreed interview schedule to concentrate in-depth on context of MRPs.
- The first part of the interview (screening tool for MRPs) will be administered for all the patients whereas the second part (Morisky 8-items and agreed interview schedule) will be administered for those who are willing to continue the second part and complete the full interview.
- The first part of the interview will take about 15 minutes and the second part will take about 30 minutes.
- The semi-structured interview will be conducted on one occasion either in a private consultation area in the community pharmacy or in patients’ homes at a mutually agreeable time.
- Informed consent (verbal) and permission to audio record interview will be obtained prior to commencing the semi-structured interviews and chief investigator field notes will also be taken. Where a patient disagrees with having their interview recorded, only chief investigator field notes will be taken.
- Information obtained from the semi-structured interviews will be collected after each interview on one occasion only.
- Once the semi-structured interview is completed the patients will be grouped into those with at least one MRP and those with no apparent problems.
- After obtaining informed consent (written), the chief investigator will also review a patient’s medication records and MUR reports held in the pharmacy in order to identify any further problems and to validate the results of the semi-structured interview.
- The identified MRPs will be classified using Gordon et al.’s (2005) MRPs classification system.
- The results obtained from MUR records, PMRs in the pharmacy and semi-structured interview will be analysed.
- An expert panel consisting of two pharmacists and a GP physician will be formed to conduct the following:
  - Make a final decision on the presence of a MRP.
  - Help the research student in finalise classification of MRPs.
  - Assess the causes and importance (i.e. clinical significance) of MRPs identified.
  - This will be done by preparing case summary (vignettes) using information from:
    - Pharmacy records.
    - The semi-structured interview.
  - Case vignettes will enable expert panel review individual cases with a MRP effectively and categorise MRPs observed using Gordon et al.’s (2002) classification.
  - The expert panel will review only 10% of the patients.
  - The minor, moderate and major significance were chosen for this study (Balesftini et al., 1999). ‘Major’ will be defined as a problem that is potentially life-threatening or cause serious morbidity; ‘Moderate’ threatens patient care but is not life-threatening whereas ‘Minor’ will be defined as a problem that threatens patient care to a small extent or degree.

Validity of the results
The results obtained from pharmacy records (i.e. PMRs and MUR reports) and face-to-face semi-structured interview will be triangulated and analysed to validate the findings. The triangulated results will enable expert panel review individual cases with a MRP, categorise type, determine cause and significance of MRPs and check the validity of the findings.

Reliability of the results
Only one researcher (chief investigator) will conduct semi-structured interviews to reduce internal bias. These interviews will be audio-taped. The supervisor will accompany the chief investigator and check the recordings for at least 10% of the interviews for reliability.

Sample representativeness
An attempt has been made to ensure that there is representation of all ethnic backgrounds listed in the protocol.

Generalisability
This study cannot capture the perspective of patients, who cannot speak English, Arabic or Persian unless they have translator which affects generalisability of the study.

Pilot study (preliminary field work)
- The aim of the preliminary fieldwork is to assess the feasibility of methods and practicability of the instruments such as various data collection forms that will be used as well as to ensure that methods and procedures fulfil our objectives and are acceptable to practitioners and patients.
- The preliminary fieldwork will be conducted in at least 3 pharmacies. Two days visits at each pharmacy will be conducted to test logistics of running the project and reduce researcher bias. Two patients will be recruited and interviewed.
- During the pilot study the following points will be considered:
  - Obtaining demographic details of community pharmacists and patients participating in the study such as number of
pharmacists in the pharmacy, language they speak, number of patients visiting the pharmacy and their ethnicity, number of prescription, medical conditions of population sample and number of MUR performed. This will enable assessing the feasibility of the methods proposed and the likelihood of the anticipated outcomes being achieved.

- Identify a workable method and time to recruit patients which will form the basis of the main study.
- To assess practicability of administering the validated MRP screening tool, 8-items Morrisky and agreed interview schedule for this study and for these patients groups. This will allow assessment of any issues which may become apparent as well as the duration of administering these tools. The feasibility to transcribe and analyse the data sets obtained from semi-structured interview will also be considered.
- To assess the potential response rates that could be obtained.
- To assess the appropriateness of using the validated MRP screening tool, 8-items Morrisky and agreed interview schedule, viability of audio recording, transcription, coding and analysis data sets obtained.
- The logistics of preparing individual case summary and applying the Gordon et al. 2005 classification system for the categorisation of MRP's identified.

A14-1. In which aspects of the research process have you actively involved, or will you involve, patients, service users, and/or their carers, or members of the public?

- Design of the research
- Management of the research
- Undertaking the research
- Analysis of results
- Dissemination of findings
- None of the above

Give details of involvement, or if none please justify the absence of involvement.

We have two patients that agreed to act as critical reviewers (advisors) to this research protocol. They were involved in design of the research and dissemination of findings.

4. RISKS AND ETHICAL ISSUES

RESEARCH PARTICIPANTS

A17-1. Please list the principal inclusion criteria (list the most important, max 5000 characters).

Inclusion criteria:
- Being from Asian (i.e. Indian, Pakistani, Bangladesh, Chinese or Other Asian) or Middle Eastern (i.e. Arab, Iranian, Turkish, or Other Middle Eastern) ethnic groups. This will be initially identified based on surname of patient and will confirmed by the patient later on.
- Taking multiple medicines for Chronic Diseases (i.e. 3 or more prescribed medicines).
- Willing to take part and informed consent.
- Over 18 years old (no parental consent required)
- Languages to be spoken include (English, Arabic or Persian). Patients who cannot speak any of these languages pending availability of a translator who support them in giving the written consent and participating in the interview. Translator could be any of the following: a family member, friend, carer or pharmacist who can act as a translator after seeking the patient's permission.

A17-2. Please list the principal exclusion criteria (list the most important, max 5000 characters).

Exclusion criteria:
- Patient who is resident in a nursing or residential home.
- Patient who has a terminal illness and under the care of Macmillan nurses.
- Patient involved in another research.

RESEARCH PROCEDURES, RISKS AND BENEFITS

Date: 09/08/2011 16 84253/238869/1/110

414
A16. Give details of all non-clinical intervention(s) or procedure(s) that will be received by participants as part of the research protocol. These include seeking consent, interviews, non-clinical observations and use of questionnaires.

Please complete the columns for each intervention/procedure as follows:

1. Total number of interventions/procedures to be received by each participant as part of the research protocol.
2. If this intervention/procedure would be routinely given to participants as part of their care outside the research, how many of the total would be routine?
3. Average time taken per intervention/procedure (minutes, hours or days)
4. Details of who will conduct the intervention/procedure, and where it will take place.

<table>
<thead>
<tr>
<th>Intervention or procedure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community pharmacists will conduct a retrospective review of both MUR reports that have been conducted in the last 6 months and Patients Medication Records (PMRs) held in the pharmacy for the last six months to recruit patients who meet the inclusion criteria. Additionally, all patient who will present at the community pharmacy to have a prescription dispensed and meet the inclusion criteria will be approached directly by pharmacist or chief investigator to invite them to take part. The chief investigator will discuss with this with pharmacist. All the identified patients will be invited to take part in the study by sending or giving in person an invitation letter and a prepared information pack explaining that the patients need to participate in a face-to-face semi-structured interview.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Questionnaire (Semi-structured interview)</td>
<td>1</td>
<td>About 45 minutes</td>
<td>The chief investigator will administer a two validated tools which include screening tool for identification of MRPs (Gordon et al., 2005) and Morisky 8-items tool (Morisky et al., 2008) as well as an agreed interview schedule.</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>NA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A21. How long do you expect each participant to be in the study in total?

2-8 weeks

A22. What are the potential risks and burdens for research participants and how will you minimise them?

For all studies, describe any potential adverse effects, pain, discomfort, distress, intrusion, inconvenience or changes to lifestyle. Only describe risks or burdens that could occur as a result of participation in the research. Say what steps would be taken to minimise risks and burdens as far as possible.

None

A23. Will interviews/ questionnaires or group discussions include topics that might be sensitive, embarrassing or upsetting, or is it possible that criminal or other disclosures requiring action could occur during the study?

☐ Yes ☐ No

If Yes, please give details of procedures in place to deal with these issues:

Participants will be advised that they are free not to discuss any topics which they don’t feel comfortable discussing, such as topics they consider sensitive, embarrassing or upsetting. Participants will also be reminded that confidentiality and anonymity will be maintained. Where issues with regards to patient safety arises, every effort will be made to encourage participants to seek advice from the appropriate healthcare professional such as their GP or

Date: 08/08/2011
regular community pharmacist. With the participant's permission, their GP and/or regular community pharmacist will be notified of potential risk of harm due to the participant's medicine use. Participants will also be made aware before the interview commences that there is an obligation to inform the appropriate authority of any information disclosed in relation to activities against the law.

**A24. What is the potential for benefit to research participants?**

1. Identification of problems related to patient's medicines management and their causes.
2. Improved understanding of medicines use to achieve a better health outcome and optimise safe medication practice in this group of patients.
3. Improved chronic disease management.
4. Empowered patients who will take responsibility in terms of monitoring/management of their disease, better support for use of medicines which should improve health outcome.
5. Reduce hospital and GP consultations.

**A26. What are the potential risks for the researchers themselves? (If any)**

None

**RECRUITMENT AND INFORMED CONSENT**

In this section we ask you to describe the recruitment procedures for the study. Please give separate details for different study groups where appropriate.

**A27-1. How will potential participants, records or samples be identified? Who will carry this out and what resources will be used?** For example, identification may involve a disease register, computerised search of GP records, or review of medical records. Indicate whether this will be done by the direct healthcare team or by researchers acting under arrangements with the responsible care organisation(s).

- Patient's recruitment will be carried out by three methods in each pharmacy and any of these methods will be used to recruit an average number of 20 patients per pharmacy. These methods include the following:
  1. Reviewing Medicine Use Review (MUR) reports: a retrospective review of MUR reports that have been conducted in the last 6 months will be carried out by community pharmacists to identify a list of patient's name and address that match inclusion criteria. The patients who meet the inclusion criteria, will be invited by community pharmacist.
  2. Reviewing Patient Medication Records (PMRs): a retrospective review of patient medication records (PMRs) held in the pharmacy database for the last 6 months will be carried out by community pharmacists to identify a list of patient's name and address that match inclusion criteria. The patients who meet the inclusion criteria, will be invited by community pharmacist.
  3. Direct approach through the community pharmacist: the patients who present at the community pharmacy to have a prescription dispensed and meet the inclusion criteria, will be directly approached and invited by community pharmacist in the pharmacy. The Chief investigator will also help community pharmacists in recruiting patients through direct approach. Once patient identified and informed of the study by pharmacy staff, potential participants will be referred to the chief investigator to invite them to take part. The chief investigator will discuss with patient only after having agreed to this with pharmacist. The chief investigator will be rotating through community pharmacies.
- All the identified patients will be invited to take part in the study by sending or giving in person an invitation letter and a prepared information pack explaining that the patient need to participate in a semi-structured interview.

**A27-2. Will the identification of potential participants involve reviewing or screening the identifiable personal information of patients, service users or any other person?**

- Yes  ○ No

Please give details below:

- Patient's recruitment will be carried out by three methods in each pharmacy and any of these methods will be used to recruit an average number of 20 patients per pharmacy. These methods include the following:
  1. Reviewing Medicine Use Review (MUR) reports: a retrospective review of MUR reports that have been conducted in the last 6 months will be carried out by community pharmacists to identify a list of patient's name and address that match inclusion criteria. The patients who meet the inclusion criteria, will be invited by community pharmacist. MUR form is attached as appendix 4.
2. Reviewing Patient Medication Records (PMRs): a retrospective review of patient medication records (PMRs) held in the pharmacy database for the last 6 months will be carried out by community pharmacists to identify a list of patient’s name and address that match inclusion criteria. The patients who meet the inclusion criteria, will be invited by community pharmacists.

3. Direct approach through the community pharmacist: the patients who present at the community pharmacy to have a prescription dispensed and meet the inclusion criteria, will be directly approached and invited by community pharmacist in the pharmacy. The Chief investigator will also help community pharmacists in recruiting patients through direct approach. Once patient identified and informed of the study by pharmacy staff, potential participants will be referred to the chief investigator to invite them to take part. The chief investigator will discuss with patient only after having agreed to this with pharmacist. The chief investigator will be rotating through community pharmacies.

- All the identified patients will be invited to take part in the study by sending or giving in person an invitation letter and a prepared information pack explaining that the patient need to participate in a semi-structured interview.

A27. Will researchers or individuals other than the direct care team have access to identifiable personal information of any potential participants?

☐ Yes  ☐ No

A28. Will any participants be recruited by publicity through posters, leaflets, adverts or websites?

☐ Yes  ☐ No

A29. How and by whom will potential participants first be approached?

The potential participants will be first approached by community pharmacists.

- Patient’s recruitment will be carried out by three methods in each pharmacy and any of these methods will be used to recruit an average number of 20 patients per pharmacy. These methods include the following:
  1. Reviewing Medicine Use Review (MUR) reports: a retrospective review of MUR reports that have been conducted in the last 6 months will be carried out by community pharmacists to identify a list of patient’s name and address that match inclusion criteria. The patients who meet the inclusion criteria, will be invited by community pharmacist. MUR form is attached as Appendix 4.
  2. Reviewing Patient Medication Records (PMRs): a retrospective review of patient medication records (PMRs) held in the pharmacy database for the last 6 months will be carried out by community pharmacists to identify a list of patient’s name and address that match inclusion criteria. The patients who meet the inclusion criteria, will be invited by community pharmacist.
  3. Direct approach through the community pharmacist: the patients who present at the community pharmacy to have a prescription dispensed and meet the inclusion criteria, will be directly approached and invited by community pharmacist in the pharmacy. The Chief investigator will also help community pharmacists in recruiting patients through direct approach. Once patient identified and informed of the study by pharmacy staff, potential participants will be referred to the chief investigator to invite them to take part. The chief investigator will discuss with patient only after having agreed to this with pharmacist. The chief investigator will be rotating through community pharmacies.

- All the identified patients will be invited to take part in the study by sending or giving in person an invitation letter and a prepared information pack explaining that the patient need to participate in a semi-structured interview.

A30. Will you obtain informed consent from or on behalf of research participants?

☐ Yes  ☐ No

If you will be obtaining consent from adult participants, please give details of who will take consent and how it will be done, with details of any steps to provide information (a written information sheet, videos, or interactive material). Arrangements for adults unable to consent for themselves should be described separately in Part B Section 6, and for children in Part B Section 7.

If you plan to seek informed consent from vulnerable groups, say how you will ensure that consent is voluntary and fully informed.

- All the identified patients will be invited to take part in the study by sending or giving in person an invitation letter and a prepared information pack explaining that the patient need to participate in a semi-structured interview.

- The information pack will consist of a patient information sheet explaining; the purpose of the study, study procedures and how it will be conducted, possible disadvantages and benefits from taking part, sponsorship and confidentiality of data and the chief investigator’s contact details. The information pack will also include a consent form, a pre-paid envelope with the chief investigator’s address and a photograph of the chief investigator so that the
patients know who they will be expecting if they wish to take part in the study. Patient Invitation Letter, Patient Information Sheet and Patient Consent Form are attached as appendices 5, 6 and 7 respectively.  
- The patients can also email or phone the chief investigator if they wish to take part instead of sending a reply slip.  
- Adequate time duration (i.e. 72 hours) will be given to the patients to consider whether they wish to take part in the study which they can do by returning the reply slip or sending an email or phoning the research student.  
- Patient, who express willingness to take part, will be contacted by the chief investigator and an agreed date, time and place will be arranged for the conduct of the semi-structured interview. An opportunity to ask questions will be provided.  
- If the patient is unable to speak English, Arabic or Persian, access to a translator will be sought after seeking the patient’s permission.  
- A written and signed consent form will be obtained by the chief investigator prior to commencing the semi-structured interview.  
- A follow-up letter will be sent to non-responders to remind them to take part. This will be done after three weeks of sending initial invitation letter and prepared information pack.  

If you are not obtaining consent, please explain why not.

Please enclose a copy of the information sheet(s) and consent form(s).

A30-2. Will you record informed consent (or advice from consultees) in writing?  

☐ Yes  ☐ No

A31. How long will you allow potential participants to decide whether or not to take part?  

Up to 72 hours

A33-1. What arrangements have been made for persons who might not adequately understand verbal explanations or written information given in English, or who have special communication needs? (e.g. translation, use of interpreters)

If the patient is unable to speak English, Arabic or Persian access to a translator will be sought. Translators could be any of the following: family member, friend, carer or pharmacist who can act as a translator after seeking the patient’s permission.

A35. What steps would you take if a participant, who has given informed consent, loses capacity to consent during the study? Tick one option only.

☐ The participant and all identifiable data or tissue collected would be withdrawn from the study. Data or tissue which is not identifiable to the research team may be retained.  

☐ The participant would be withdrawn from the study. Identifiable data or tissue already collected with consent would be retained and used in the study. No further data or tissue would be collected or any other research procedures carried out on or in relation to the participant.  

☐ The participant would continue to be included in the study.  

☐ Not applicable – informed consent will not be sought from any participants in this research.  

☐ Not applicable – it is not practicable for the research team to monitor capacity and continued capacity will be assumed.

Further details:

If you plan to retain and make further use of identifiable data/tissue following loss of capacity, you should inform participants about this when seeking their consent initially.

CONFIDENTIALITY

In this section, personal data means any data relating to a participant who could potentially be identified. It includes pseudonymised data capable of being linked to a participant through a unique code number.

Date: 08/08/2011 20

84253/238855/1/110

418
### Storage and use of personal data during the study

A36. Will you be undertaking any of the following activities at any stage (including in the identification of potential participants)? (Tick as appropriate)

- [ ] Access to medical records by those outside the direct healthcare team
- [ ] Electronic transfer by magnetic or optical media, email or computer networks
- [ ] Sharing of personal data with other organisations
- [ ] Export of personal data outside the EEA
- [X] Use of personal addresses, postcodes, faxes, emails or telephone numbers
- [X] Publication of direct quotations from respondents
- [ ] Publication of data that might allow identification of individuals
- [X] Use of audio/visual recording devices
- [X] Storage of personal data on any of the following:
  - [ ] Manual files including X-rays
  - [ ] NHS computers
  - [ ] Home or other personal computers
  - [X] University computers
  - [ ] Private company computers
  - [ ] Laptop computers

Further details:

A38. How will you ensure the confidentiality of personal data? Please provide a general statement of the policy and procedures for ensuring confidentiality, e.g. anonymisation or pseudonymisation of data.

The data collected will be handled with confidentiality throughout the study period and kept in a coded format without the name of the patients and locked all the time in a designated cabinet for this purpose. Data will be stored in the School of Pharmacy computers where all files will be password protected and only the researcher will be allowed access. Storage will be responsibility of Professor Felicity Smith.

A40. Who will have access to participants' personal data during the study? Where access is by individuals outside the direct care team, please justify and say whether consent will be sought.

The chief investigator. This will enable access to patient's relevant health records. Consent will be sought to access patient records and personal information.

### Storage and use of data after the end of the study

A43. How long will personal data be stored or accessed after the study has ended?

- [ ] Less than 3 months
- [ ] 3 – 6 months
- [ ] 6 – 12 months
- [ ] 12 months – 3 years
- [X] Over 3 years

If longer than 12 months, please justify:
The School of Pharmacy University of London.

Date: 09/08/2011

21

84253/238859/1/110
INCENTIVES AND PAYMENTS

A46. Will research participants receive any payments, reimbursement of expenses or any other benefits or incentives for taking part in this research?

- Yes  - No

A47. Will individual researchers receive any personal payment over and above normal salary, or any other benefits or incentives, for taking part in this research?

- Yes  - No

A48. Does the Chief Investigator or any other investigator/collaborator have any direct personal involvement (e.g. financial, share holding, personal relationship etc.) in the organisations sponsoring or funding the research that may give rise to a possible conflict of interest?

- Yes  - No

NOTIFICATION OF OTHER PROFESSIONALS

A49-1. Will you inform the participants’ General Practitioners (and/or any other health or care professional responsible for their care) that they are taking part in the study?

- Yes  - No

If Yes, please enclose a copy of the information sheet/letter for the GP/health professional with a version number and date.

PUBLICATION AND DISSEMINATION

A50. Will the research be registered on a public database?

- Yes  - No

Please give details, or justify if not registering the research.

A51. How do you intend to report and disseminate the results of the study? Tick as appropriate:

- Peer reviewed scientific journals
- Internal report
- Conference presentation
- Publication on website
- Other publication
- Submission to regulatory authorities
- Access to raw data and right to publish freely by all investigators in study or by Independent Steering Committee on behalf of all investigators
- No plans to report or disseminate the results
- Other (please specify)

A53. Will you inform participants of the results?

Date: 09/08/2011
5. Scientific and Statistical Review

A54. How has the scientific quality of the research been assessed? Tick as appropriate:

- [ ] Independent external review
- [ ] Review within a company
- [ ] Review within a multi-centre research group
- [x] Review within the Chief Investigator's institution or host organisation
- [x] Review within the research team
- [ ] Review by educational supervisor
- [ ] Other

Justify and describe the review process and outcome. If the review has been undertaken but not seen by the researcher, give details of the body which has undertaken the review.

For all studies except non-doctoral student research, please enclose a copy of any available scientific critique reports, together with any related correspondence.

For non-doctoral student research, please enclose a copy of the assessment from your educational supervisor/institution.

A56. How have the statistical aspects of the research been reviewed? Tick as appropriate:

- [ ] Review by independent statistician commissioned by funder or sponsor
- [ ] Other review by independent statistician
- [ ] Review by company statistician
- [ ] Review by a statistician within the Chief Investigator's institution
- [ ] Review by a statistician within the research team or multi-centre group
- [x] Review by educational supervisor
- [ ] Other review by individual with relevant statistical expertise
- [ ] No review necessary as only frequencies and associations will be assessed – details of statistical input not required

In all cases please give details below of the individual responsible for reviewing the statistical aspects. If advice has been provided in confidence, give details of the department and institution concerned.

Title: Forename/Initials Surname
Mr. Robert Kozarski

Department: CLIGIR, Health and Human Sciences Research Institute

Institution: University of Hertfordshire

Work Address: College Lane Campus

Post Code: AL10 9AB
Telephone: 01707284494
Fax: 01707286388
Mobile: r.kozarski@herts.ac.uk

E-mail: r.kozarski@herts.ac.uk

Date: 08/08/2011
A57. What is the primary outcome measure for the study?
1) To identify different types of medicine-related problems (MRPs) as well as to categorise the types of MRPs experienced by Asian and Middle Eastern patients and the medicines involved.
2) To identify factors causing medicine-related problems associated with Asian and Middle Eastern groups of patients.
3) To assess the significance of MRPs experienced by Asian and Middle Eastern patients.
4) To explore different strategies on how to reduce the occurrence of future MRPs.

A59. What are the secondary outcome measures? (if any)

A60. How was the sample size decided upon? If a formal sample size calculation was used, indicate how this was done, giving sufficient information to justify and reproduce the calculation.

- A formal sample size calculation was carried out to indicate the required number of participants. The frequency of MRPs in the community, reported in the literature, is between 2.5 - 65% (Gordon et al., 2005).
- In Gordon et al. Study (2005), 70% of patients agreed to participate in the screening interviews in the pharmacies. Therefore, the formal sample size calculation for this study was carried out based on response rate of (70%) for the screening interviews (Gordon et al., 2005). The aim in this study will be to recruit an average number of 200 patients for semi-structured interview. This was done as follows:
  □ The first 15 community pharmacies, that agree to take part in the study, will be recruited. Every pharmacy from 15 will be asked to recruit an average number of 20 patients using any of the three methods for patient's recruitment. This will result in recruiting 300 patients for the semi-structured interview. Based on 70% response rate, around 200 (n=210) patients will be interviewed.
  □ The sample size of 260 patients will yield adequate power of 85% to allow clinically significant differences to be statistically significant and to make sample size representative. The power of the sample size was calculated using the following formula:
    With a 95% confidence interval (z=1.96) and interval no wider than 0.05 (m), P is the power and n is the sample size.

A61. Will participants be allocated to groups at random?
- Yes  - No

A62. Please describe the methods of analysis (statistical or other appropriate methods, e.g. for qualitative research) by which the data will be evaluated to meet the study objectives.

1. Quantitative Data Analysis
   Quantitative data will be analysed using the Statistical Package for the Social Sciences (SPSS) version 13.0 for window-based to report descriptive statistics. MRPs identified from patients' perspective will be analysed as separate subsets. Quantitative data will be analysed to categorise types, causes of MRPs observed and the significance of the MRPs. Statistical methods including the Fisher's exact test, the Mann-Whitney test and the Chi-square test will be used to analyse categorical data where appropriate.
II. Qualitative Data Analysis

Information from the semi-structured interviews will provide the study with qualitative data. The interviews will be transcribed and coded according to themes. Thematic analysis which is a model of narrative analysis will be used (Braun and Clarke 2006) with the inductive theory approach for qualitative data analysis. Verbal audio taped interviews will be transcribed verbatim into written format by the researcher to allow the chief investigator to read and re-read the transcripts. Transcripts will be checked against the original tapes for accuracy by the project supervisor. Data will be coded using the NVivo (Non-numerical Unstructured Data Indexing Searching and Theorising) computer software. Coding will enable the identification of areas of interest to the study. A data-originated thematic analysis will be employed. Sub-themes and overarching themes will then be developed from final codes. To enable a true presentation of the experiences being described, the themes developed will be reviewed and refined if required. Data extracts will be provided to support the themes developed as well as provide a true reflection of the information contained in the data set used in the analysis (Bryman 2004).

Ref:

6. MANAGEMENT OF THE RESEARCH

A63. Other key investigators/collaborators. Please include all grant co-applicants, protocol co-authors and other key members of the Chief Investigators team, including non-doctoral student researchers.

Title Forename/Initials Surname
Post Qualifications
Employer
Work Address

Post Code Telephone
Fax Mobile
Work Email

A64. Details of research sponsor(s)

A64-1. Sponsor

Lead Sponsor

Status:
- [ ] NHS or HSC care organisation
- [ ] Academic
- [ ] Pharmaceutical industry
- [ ] Medical device industry
- [ ] Local Authority
- [ ] Other social care provider (including voluntary sector or private organisation)
- [ ] Other

If Other, please specify:

Commercial status:

Date: 09/08/2011 25

84253/238869/1/110

423
**Contact person**

Name of organisation: School of Pharmacy, University of London  
Given name: Maureen  
Family name: Boylan  
Address: 29-39 Brunswick Square  
Town/city: London  
Post code: WC1N 1AX  
Country: UNITED KINGDOM  
Telephone: 02077535817  
Fax: 02078373465  
E-mail: maureen.boylan@pharmacy.ac.uk

Is the sponsor based outside the UK?  
☐ Yes ☑ No

*Under the Research Governance Framework for Health and Social Care, a sponsor outside the UK must appoint a legal representative established in the UK. Please consult the guidance notes.*

<table>
<thead>
<tr>
<th>A65. Has external funding for the research been secured?</th>
</tr>
</thead>
</table>
| ☐ Funding secured from one or more funders  
| ☑ External funding application to one or more funders in progress  
| ☑ No application for external funding will be made |

<table>
<thead>
<tr>
<th>A07. Has this or a similar application been previously rejected by a Research Ethics Committee in the UK or another country?</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Yes ☑ No</td>
</tr>
</tbody>
</table>

*Please provide a copy of the unfavourable opinion letter(s). You should explain in your answer to question A6-2 how the reasons for the unfavourable opinion have been addressed in this application.*

<table>
<thead>
<tr>
<th>A08. Give details of the lead NHS R&amp;D contact for this research:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title: Forename/Initials Surname</td>
</tr>
<tr>
<td>Organisation</td>
</tr>
<tr>
<td>Address</td>
</tr>
<tr>
<td>Post Code</td>
</tr>
<tr>
<td>Work Email</td>
</tr>
<tr>
<td>Telephone</td>
</tr>
<tr>
<td>Fax</td>
</tr>
<tr>
<td>Mobile</td>
</tr>
</tbody>
</table>

*Details can be obtained from the NHS R&D Forum website: [http://www.rdforum.nhs.uk](http://www.rdforum.nhs.uk)*

Date: 09/08/2011  
26  
84253/238869/1/110
A69.1. How long do you expect the study to last in the UK?

Planned start date: 31/01/2011
Planned end date: 31/01/2014
Total duration:
Years: 3  Months: 0  Days: 0

A70. Definition of the end of trial, and justification in the case where it is not the last visit of the last subject undergoing the trial [1]

A71.1. Is this study?

☐ Single centre
☒ Multicentre

A71.2. Where will the research take place? (Tick as appropriate)

☒ England
☐ Scotland
☐ Wales
☐ Northern Ireland
☐ Other countries in European Economic Area

Total UK sites in study

Does this trial involve countries outside the EU?

☐ Yes  ☐ No

A72. What host organisations (NHS or other) in the UK will be responsible for the research sites? Please indicate the type of organisation by ticking the box and give approximate numbers of planned research sites:

☐ NHS organisations in England
☐ NHS organisations in Wales
☐ NHS organisations in Scotland
☐ HSC organisations in Northern Ireland
☐ GP practices in England
☐ GP practices in Wales
☐ GP practices in Scotland
☐ GP practices in Northern Ireland
☐ Social care organisations
☐ Phase 1 trial units
☐
☐ Probation areas
☐ Independent hospitals
☒ Educational establishments
☐ Independent research units
☐ Other (give details)

Date: 09/08/2011  27  84253/23885/1/110
A76-1. What arrangements will be made for insurance and/or indemnity to meet the potential legal liability of the sponsor(s) for harm to participants arising from the management of the research? Please tick box(es) as applicable.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>NHS indemnity scheme will apply (NHS sponsors only)</td>
</tr>
<tr>
<td>✔</td>
<td>Other insurance or indemnity arrangements will apply (give details below)</td>
</tr>
</tbody>
</table>

The School of Pharmacy have an insurance policy (incorporating public liability) with Zurich Municipal until 31 July 2011. Insurance policy number NHE-01CA21-0013

Please enclose a copy of relevant documents.

A76-2. What arrangements will be made for insurance and/or indemnity to meet the potential legal liability of the sponsor(s) or employer(s) for harm to participants arising from the design of the research? Please tick box(es) as applicable.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>NHS indemnity scheme will apply (protocol authors with NHS contracts only)</td>
</tr>
<tr>
<td>✔</td>
<td>Other insurance or indemnity arrangements will apply (give details below)</td>
</tr>
</tbody>
</table>

The School of Pharmacy have an insurance policy (incorporating public liability) with Zurich Municipal until 31 July 2011. Insurance policy number NHE-01CA21-0013

Please enclose a copy of relevant documents.

A76-3. What arrangements will be made for insurance and/or indemnity to meet the potential legal liability of investigators/collaborators arising from harm to participants in the conduct of the research?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>NHS indemnity scheme or professional indemnity will apply (participants recruited at NHS sites only)</td>
</tr>
<tr>
<td>✔</td>
<td>Research includes non-NHS sites (give details of insurance/ indemnity arrangements for these sites below)</td>
</tr>
</tbody>
</table>

The School of Pharmacy have an insurance policy (incorporating public liability) with Zurich Municipal until 31 July 2011. Insurance policy number NHE-01CA21-0013

Please enclose a copy of relevant documents.
### PART C: Overview of research sites

Please enter details of the host organisations (Local Authority, NHS or other) in the UK that will be responsible for the research sites. For NHS sites, the host organisation is the Trust or Health Board. Where the research site is a primary care site, e.g. GP practice, please insert the host organisation (PCT or Health Board) in the Institution row and insert the research site (e.g. GP practice) in the Department row.

<table>
<thead>
<tr>
<th>Research site</th>
<th>Institution name</th>
<th>Department name</th>
<th>Street address</th>
<th>Town/city</th>
<th>Post Code</th>
<th>Title</th>
<th>First name/Initials</th>
<th>Surname</th>
<th>Tel:</th>
<th>Fax:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Islington PCT</td>
<td>Islington PCT</td>
<td>338-346 Goswell Road</td>
<td>London/Greater London</td>
<td>EC1V 7LQ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brent Teaching PCT</td>
<td>Brent Teaching PCT</td>
<td>116 Chaplin Road</td>
<td>Wembley/Middlesex</td>
<td>HA0 4UZ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harrow PCT</td>
<td>Harrow PCT</td>
<td>59-65 Lowlands Road</td>
<td>Harrow/Middlesex</td>
<td>HA1 3AW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bedfordshire PCT</td>
<td>Bedfordshire PCT</td>
<td>21 Kimbolton Road</td>
<td>Bedford/Bedfordshire</td>
<td>MK40 2AW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Luton PCT</td>
<td>Luton PCT</td>
<td>Park Street West</td>
<td>Luton/Bedfordshire</td>
<td>LU1 3BE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Date:** 09/08/2011
D1. Declaration by Chief Investigator

1. The information in this form is accurate to the best of my knowledge and belief and I take full responsibility for it.

2. I undertake to abide by the ethical principles underlying the Declaration of Helsinki and good practice guidelines on the proper conduct of research.

3. If the research is approved I undertake to adhere to the study protocol, the terms of the full application as approved and any conditions set out by review bodies in giving approval.

4. I undertake to notify review bodies of substantial amendments to the protocol or the terms of the approved application, and to seek a favourable opinion from the main REC before implementing the amendment.

5. I undertake to submit annual progress reports setting out the progress of the research, as required by review bodies.

6. I am aware of my responsibility to be up to date and comply with the requirements of the law and relevant guidelines relating to security and confidentiality of patient or other personal data, including the need to register when necessary with the appropriate Data Protection Officer. I understand that I am not permitted to disclose identifiable data to third parties unless the disclosure has the consent of the data subject or, in the case of patient data in England and Wales, the disclosure is covered by the terms of an approval under Section 251 of the NHS Act 2002.

7. I understand that research records/data may be subject to inspection by review bodies for audit purposes if required.

8. I understand that any personal data in this application will be held by review bodies and their operational managers and that this will be managed according to the principles established in the Data Protection Act 1998.

9. I understand that the information contained in this application, any supporting documentation and all correspondence with review bodies or their operational managers relating to the application:

   - Will be held by the main REC or the GTAC (as applicable) until at least 3 years after the end of the study; and by NHS R&D offices (where the research requires NHS management permission) in accordance with the NHS Code of Practice on Records Management.
   - May be disclosed to the operational managers of review bodies, or the appointing authority for the main REC, in order to check that the application has been processed correctly or to investigate any complaint.
   - May be seen by auditors appointed to undertake accreditation of RECs.
   - Will be subject to the provisions of the Freedom of Information Acts and may be disclosed in response to requests made under the Acts except where statutory exemptions apply.

10. I understand that information relating to this research, including the contact details on this application, may be held on national research information systems, and that this will be managed according to the principles established in the Data Protection Act 1998.

11. I understand that the summary of this study will be published on the website of the National Research Ethics Service (NRES), together with the contact point for enquiries named below. Publication will take no earlier than 3 months after issue of the ethics committee’s final opinion of the withdrawal of the application.

Contact point for publication (Not applicable for R&D Forms)
NRES would like to include a contact point with the published summary of the study for those wishing to seek further information. We would be grateful if you would indicate one of the contact points below.

☑ Chief Investigator
☐ Sponsor
☐ Study co-ordinator

Date: 09/08/2011
NHS REC Form

Reference: 11/LO/1391

☐ Student
☐ Other – please give details
☐ None

Access to application for training purposes (Not applicable for R&D Forms)
Optional – please tick as appropriate:

☑️ I would be content for members of other RECs to have access to the information in the application in confidence for training purposes. All personal identifiers and references to sponsors, funders and research units would be removed.

Signature: __________________________

Print Name: Faten Alhomoud

Date: 30/07/2011  (dd/mm/yyyy)
D2. Declaration by the sponsor's representative

If there is more than one sponsor, this declaration should be signed on behalf of the co-sponsors by a representative of the lead sponsor named at A64-1.

I confirm that:

1. This research proposal has been discussed with the Chief Investigator and agreement in principle to sponsor the research is in place.

2. An appropriate process of scientific critique has demonstrated that this research proposal is worthwhile and of high scientific quality.

3. Any necessary indemnity or insurance arrangements, as described in question A76, will be in place before this research starts. Insurance or indemnity policies will be renewed for the duration of the study where necessary.

4. Arrangements will be in place before the study starts for the research team to access resources and support to deliver the research as proposed.

5. Arrangements to allocate responsibilities for the management, monitoring and reporting of the research will be in place before the research starts.

6. The duties of sponsors set out in the Research Governance Framework for Health and Social Care will be undertaken in relation to this research.

7. I understand that the summary of this study will be published on the website of the National Research Ethics Service (NRES), together with the contact point for enquiries named in this application. Publication will take place no earlier than 3 months after issue of the ethics committee's final opinion or the withdrawal of the application.

Signature:  .....................................................
Print Name:  Ms M F Boylan
Post:  Chief Operating Officer and Secretary to Council
Organisation:  The School of Pharmacy, University of London
Date:  30/07/2011  (dd/mm/yyyy)
D3. Declaration for student projects by academic supervisor(s)

1. I have read and approved both the research proposal and this application. I am satisfied that the scientific content of the research is satisfactory for an educational qualification at this level.

2. I undertake to fulfil the responsibilities of the supervisor for this study as set out in the Research Governance Framework for Health and Social Care.

3. I take responsibility for ensuring that this study is conducted in accordance with the ethical principles underlying the Declaration of Helsinki and good practice guidelines on the proper conduct of research, in conjunction with clinical supervisors as appropriate.

4. I take responsibility for ensuring that the applicant is up to date and complies with the requirements of the law and relevant guidelines relating to security and confidentiality of patient and other personal data, in conjunction with clinical supervisors as appropriate.

---

**Academic supervisor 1**

Signature: ..................................................................................................................

Print Name: Dr. Zoe Adlanpour

Post: Head of Pharmacy, Practice and Public Health

Organisation: School of Pharmacy, University of Hertfordshire

Date: 30/07/2011 (dd/mm/yyyy)

---

**Academic supervisor 2**

Signature: ..................................................................................................................

Print Name: Professor Soraya Dhillon

Post: Head of School

Organisation: School of Pharmacy, University of Hertfordshire

Date: 30/07/2011 (dd/mm/yyyy)

---

**Academic supervisor 3**

Signature: ..................................................................................................................

Print Name: Professor Felicity Smith

Post: Professor of Pharmacy Practice, Department of Practice and Policy

Organisation: School of Pharmacy, University of London

Date: 30/07/2011 (dd/mm/yyyy)
Appendix 16: The provisional decision letter from NHS REC.

06 September 2011

Miss Fatem Alhomoud
Department of Practice and Policy,
School of Pharmacy,
University of London
Entrance A,
Mezzanine Floor,
British Medical Association (BMA)
Tavistock Square, London
WC1H 9JP

Dear Miss Alhomoud

Study Title: Medicine Use and Medicine Related Problems experienced by Ethnic Minority Patients with Chronic Diseases in Primary Care

REC reference number: 11/LO/1391
Protocol number: N/A

The Research Ethics Committee reviewed the above application at the meeting held on 01 September 2011. Thank you for attending to discuss the study.

Documents reviewed

The documents reviewed at the meeting were:

<table>
<thead>
<tr>
<th>Document</th>
<th>Version</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covering Letter</td>
<td></td>
<td>06 August 2011</td>
</tr>
<tr>
<td>Evidence of insurance or indemnity</td>
<td></td>
<td>07 September 2010</td>
</tr>
<tr>
<td>Interview Schedules/Topic Guides</td>
<td>1</td>
<td>10 June 2011</td>
</tr>
<tr>
<td>Investigator CV</td>
<td></td>
<td>06 August 2011</td>
</tr>
<tr>
<td>Letter from Sponsor</td>
<td></td>
<td>06 August 2011</td>
</tr>
<tr>
<td>Letter of invitation to participant</td>
<td>1</td>
<td>10 June 2011</td>
</tr>
<tr>
<td>Other: Academic Supervisor CV - Soraya Dhillon</td>
<td></td>
<td>09 August 2011</td>
</tr>
<tr>
<td>Other: Academic Supervisor CV - Felicity Smith</td>
<td></td>
<td>09 August 2011</td>
</tr>
<tr>
<td>Other: Academic Supervisor CV - Zoe Aslanpour</td>
<td></td>
<td>09 August 2011</td>
</tr>
<tr>
<td>Other: Letter of Invitation to Pharmacists</td>
<td>1</td>
<td>10 June 2011</td>
</tr>
<tr>
<td>Other: Screening Interview Schedule</td>
<td>1</td>
<td>10 June 2011</td>
</tr>
<tr>
<td>Other: Mortisky 8-items tool document</td>
<td>1</td>
<td>10 June 2011</td>
</tr>
<tr>
<td>Participant Consent Form: Patient Consent Form</td>
<td>1</td>
<td>10 June 2011</td>
</tr>
</tbody>
</table>
Provisional opinion

1. The Committee asked you about your views of Ethnicity is and what an Ethnic Minority is. You explained that an Ethnic minority in UK would be mostly Asians and primarily Indians, Pakistanis, Bangladeshis as they are the highest percentage of ethnic minority in UK. The Committee pointed of that the above are actually not the majority ethnic minority in UK and that you must get the information right. You further added that the research also intends to include the Middle Eastern population as well.

2. The Committee asked you if you are looking to identify the participants through their surname, which in the Committee’s views is not the best practice. You explained that you do plan to identify participants based on surname but agreed that it was not ideal. You further explained that you mostly relied on the information provided by the community pharmacist as he/she would be the person to contact the participants.

3. The Committee asked you that it was not clear if you intend to include or exclude the people born in the UK. You requested to get back on this point.

4. The Committee asked you that since they are not studying the ethnic majority, how you would know if the data is credible. You explained that you are looking to base your research on the past studies already done on the same topic.

5. The Committee asked you as to why you are focusing only on the ethnicity only and why not the culture, demographics and other factors as these are also important contributing factors. The Committee further questioned as to what was the basis of excluding other ethnicities from the researcher. You explained that since you have limited time for the research, you are focusing on a group more familiar to the researcher and therefore the choice is based on the researcher’s own background.

6. The Committee asked you since the translators are not formally appointed and you are expecting the other staff and colleagues to help translate during the interview, there is a great risk that the data could be flawed. The Committee further pointed out that the interviews are the key source of information and form the bases of this research but the information gained through these interviews cannot be reliable due the reasons mentioned above, and therefore you need to seriously reconsider this. You agreed to take this point on board and get back to the Committee.

7. The Committee advised you that the Patient Information Sheet is quite hard to read and understand and the Consent Form is very lengthy and therefore would need revising. You agreed to consider the point.

8. The Committee advised you that the questionnaires are not suitable for the researcher and they are not completely related to the study and would most likely not fulfil the requirements or objectives of the study. You agreed to consider the point.

9. The Committee asked you if a community pharmacist has agreed to take part in the study and help recruit the participants. You clarified that a community pharmacist has not been approached yet.

10. The Committee requested you to provide and external review by a reviewer who is
independent of your institution. You agreed to provide the same.

11. The Committee asked you if you plan to visit the patients in their homes as the Committee has concerns as to whom you would approach and also about the safety of the researcher. You explained that you do intend to visit some patients and will consider the point made by the Committee.

12. The Committee asked you that research does not clearly define the term “medicine related problem”. The Committee expressed its concerns to you that since the problem is not clearly defined or identified; it is possible that you could actually be putting in to the minds of the participants that they have a problem, whereas in reality there might not be a problem. The Committee further pointed out to that the word “problem” has been repeatedly mentioned in the study but no specific problem has actually been identified. The Committee advised you that this could lead to biased results of the study.

The Committee is unable to give an ethical opinion on the basis of the information and documentation received so far. Before confirming its opinion, the Committee requests that you provide the further information set out below.

The Committee delegated authority to confirm its final opinion on the application to a meeting of the sub-committee of the REC.

**Further information or clarification required**

The Committee requested the following information before confirming its final opinion:

1. The Committee requested the recruitment process to be clearly defined and explained. The Committee also requested for the details of a community pharmacist who has agreed to take part in the study and their role to be clearly defined.

2. The Committee requested the Consent Form to be redrafted as it is very lengthy and could be difficult and time consuming for the patients.

3. The Committee requested the Patient Information Sheet to be rewritten in a simpler language so that it is easier to read and more comprehensible.

4. The Committee requested the researcher to clearly lay out any real benefits to the participants in the section A24 of the NHS REC form.

5. The Committee requested the questionnaires to be redrafted to include the range of all ethnicities in the options.

6. The Committee advised the researcher to reconsider the study objectives as they are not clear and hence difficult to achieve.

7. The Committee requested the engagement letter to the pharmacist to be redrafted as it is not clear.

8. The Committee requested an independent peer review to be provided. The peer review should be done by a person external to the researcher’s institution.

9. The Committee advised to seriously reconsider identifying the participants based on their surname.

10. The Committee advised to reconsider selecting the participants solely on the basis of the limited ethnicity.
11. The Committee advised that it would be a good idea to actually identify the so called “problems” before they approach the participants for such problems or conduct a research on it.

12. The Committee advised to appoint the translators formally as the whole research depends on the interviews and therefore the information that comes through the interviews should be credible.

If you would find it helpful to discuss any of the matters raised above or seek further clarification from a member of the Committee, you are welcome to contact Rajat Khullar, Committee Co-ordinator.

When submitting your response to the Committee, please send revised documentation where appropriate underlining or otherwise highlighting the changes you have made and giving revised version numbers and dates.

If the committee has asked for clarification or changes to any answers given in the application form, please do not submit a revised copy of the application form; these can be addressed in a covering letter to the REC.

The Committee will confirm the final ethical opinion within a maximum of 60 days from the date of initial receipt of the application, excluding the time taken by you to respond fully to the above points. A response should be submitted by no later than 07 January 2012.

**Membership of the Committee**

The members of the Committee who were present at the meeting are listed on the attached sheet.

**Statement of compliance**

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

| 11/LO/1391 | Please quote this number on all correspondence |

Yours sincerely,

[Signature]

Dr Arthur T. Tucker
Chair

Email: Ucb-tr.CityandEastREC@nhs.net

Enclosures: List of names and professions of members who were present at the meeting and those who submitted written comments.
# NRES Committee London - City & East

**Attendance at Committee meeting on 01 September 2011**

## Committee Members:

<table>
<thead>
<tr>
<th>Name</th>
<th>Profession</th>
<th>Present</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Louise Abrams</td>
<td>Pharmacology (Vice Chair)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Dr Chandan Alam</td>
<td>Experimental Pathology</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Dr Marie E Bartsley</td>
<td>Director</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Dr Ayse Baxter</td>
<td>Independent Consultant Pharmaceutical Physician</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Mr Frank Cross</td>
<td>Consultant General and Vascular Surgeon</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Ms Stephanie Ellis</td>
<td></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Dr Miran Epstein</td>
<td>Senior Lecturer Medical Ethics</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Mrs Janelle Hill</td>
<td>Non-medical lay member</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Professor Atholl Johnston</td>
<td>Professor of Clinical Pharmacology</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Professor Malcolm Law</td>
<td>Epidemiologist</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Mr John Lynch</td>
<td>Non-Medical Lay Member</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Dr Eleni Palazidou</td>
<td>Consultant Psychiatrist &amp; Honorary Senior Lecturer</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Dr Kim Piper</td>
<td>Consultant Histopathologist/Hon Sen Lecturer in Oral Pathology</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Dr Melanie Powell</td>
<td>Consultant Clinical Oncologist</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Ms Brigid Tucker</td>
<td>Non-Medical Lay Member</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Dr Arthur T. Tucker</td>
<td>Principal Clinical Scientist &amp; Senior Lecturer (REC Chairman)</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Professor David Wingate</td>
<td>Gastroenterologist</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Dr Ariel Zosmer</td>
<td>Consultant, Associate Specialist</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

## Also in attendance:

<table>
<thead>
<tr>
<th>Name</th>
<th>Position (or reason for attending)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr Rajat Khullar</td>
<td>Committee Coordinator</td>
</tr>
</tbody>
</table>
Appendix 17: The response letter to NHS REC.

Mr Rajat Khullar  
National Research Ethics Services  
NRES Committee of London - City & East  
South West REC Centre  
Whitefriars  
Level 3, Block B  
Lewins Mead  
Bristol  
BS1 2NT

12/09/2011

Dear Mr Khullar

Study title: Medicine use and medicine related problems experienced by ethnic minority patients with chronic diseases in primary care.  
REC reference number: 11/LO/1391

Thank you for your letter dated on the 09th September 2011. Response to each of the questions is below:

(Short title: Medicine use issues experienced by Asian and Middle Eastern patients)

Request 1:

a. The Committee requested the recruitment process to be clearly defined and explained.

Response 1:

a. Patients for this study will be recruited through community pharmacy. Therefore, there will be a 2 stage recruitment process: (1) recruitment of community pharmacy sites and (2) recruitment of patients from the community pharmacy.

Recruitment of Community pharmacies

The Primary Care Trusts (PCT) in Islington, Brent, Harrow, Luton and Bedfordshire will be asked to provide the chief investigator with a list of community pharmacies located in their areas based on the inclusion criteria.

The inclusion criteria include: (a) pharmacies located in areas which have a population diverse in age, socio-economic characteristics and presence of Asian and Middle Eastern groups and; (b) pharmacies conducting Medicine Use Review (MUR), and thus having a private consultation room. This is to allow the semi-structured interview to take place, in a quiet and peacefully environment.

From the list obtained, all those eligible will be invited to take part in the study by sending an invitation letter and a summary of the research study. A reply slip with prepaid envelope will be included.
The aim of this study is to recruit 15 community pharmacy sites. The community pharmacy sites recruited will be contacted by the chief investigator to arrange recruitment process of patients.

Recruitment of patients:

The community pharmacists will invite eligible patients to take part in the study and if they agree, they will be referred to the chief investigator who will provide a full explanation of the study and take informed (written) consent prior to commencing the interview.

Eligibility criteria

Patients will be recruited based on inclusion and exclusion criteria as follows:

Inclusion criteria:

- Patients whose ancestry is from Asian or Middle Eastern background, irrespective of their place of birth. Asian background include Indian, Pakistani, Bangladeshi or any other Asian background whereas Middle Eastern background include Arabs, Iranian, Turkish or any other Middle Eastern background. Patient will be identified visually inspection of forename and surname together and ethnic identity will be confirmed by the patient later on.

- Patients on multiple medicines (i.e. 3 or more prescribed medicines).

- Willing to take part and informed consent.

- Over 18 years old (no parental consent required).

- Patients who speak the following languages: English or Arabic. Those who cannot speak any of these languages, will also be included through utilising routine practice used by community pharmacists who provide services for Asian and Middle Eastern patients who do not speak English. This may involve a community pharmacist or other pharmacy staff who assists in communicating with the patient during the interview. Where translation or interpretation is required, the interviews will be validated by the research team which include speakers of Arabic, Farsi, Panjabi, Hindi and Urdu.

Exclusion criteria:

- Patients who are considered by community pharmacists to be too unwell.

- Patients who do have a clear language barrier.

Patients recruitment will be carried out by two methods in each pharmacy and any of these methods will be used to recruit an average number of 20 patients per pharmacy. These methods are:
1. **Reviewing Medicine Use Review (MUR) reports and Patient Medication Records (PMRs).** The community pharmacists will do a retrospective review of MUR reports and PMRs over the last 6 months to identify eligible patients. The community pharmacists will approach and invite the patients by telephone and each patient will be provided with a prepared information pack which will include a patient information sheet, reply slip and pre-paid envelope.

2. **Direct approach.** The community pharmacists will approach eligible patients directly when they come to the pharmacy (e.g. for a prescription, OTC, consultation) and invite them to take part. Each patient will be provided with a prepared information pack which will include a patient information sheet, reply slip and pre-paid envelope.

If patients would like to take part, they will be requested to return the reply slip in the pre-paid envelope provided to the chief investigator address or alternatively if they prefer further information, they can email or phone the chief investigator.

Patients, who have returned the reply slip, will be contacted by the chief investigator and a date and time will be arranged for the semi-structured interview. The semi-structured interview will take place in the community pharmacy consultation room for 45 minutes and will be conducted by the chief investigator. Informed (written) consent will be taken by the chief investigator prior commencing the interview.

**Request:**

b. The Committee also requested for the details of a community pharmacist who has agreed to take part in the study and their role to be clearly defined.

**Response:**

b. **Pharmacist who has agreed to take part in the study** is Mr Satnam Butter, Acorn Chemists, 213-217 Dunstable Road, Luton, Beds, LU4 8BN.

Telephone: 01582 560393

Email: satnam.butter@lpcpharma.com

Mr. Satnam Butter will assist with patients’ recruitment as explained above. He has already been part of this project team where a similar studies had been conducted in 2009 and 2010(Sidi et al., 2009; Opara et al., 2010). He will also support us in this study.

**Request 2:** The Committee requested the Consent Form to be redrafted as it is very lengthy and could be difficult and time consuming for the patients.

**Response 2:** The patient consent form has been redrafted in a shorter and simpler way (see patient consent form version 2.0 with track changes and final version 2.0 attached). Please note that the title has been amended to specifically defined Asian and Middle Eastern patients.
Request 3: The Committee requested the Patient Information Sheet to be rewritten in a simpler language so that it is easier to read and more comprehensible.

Response 3: The patient information sheet and the patient invitation letter have been rewritten in a simpler language so that they is easier to read and more comprehensible (see patient information sheet and patient invitation letter version 2.0 with track changes and final version 2.0 attached). Please note that the title has been amended to specifically defined Asian and Middle eastern patients.

Request 4: The Committee requested the researcher to clearly lay out any real benefits to the participants, in the section A24 of the NHS REC form.

Response 4: The real benefit to the participants in the section A24 of the NHS REC form has been laid out as follows: this research project is not designed to be of direct benefit to the participants but to inform the development of future medicine services for specific patient groups. However, if any medicine-related problem is identified in the course of the research, then the patient will be advised by the chief investigator to consult their pharmacist or GP, alternatively if they prefer and with their permission, the chief investigator will do that on their behalf. At the end of the interview patients will be given a chance to speak to a community pharmacist if they wish.

Request 5: The Committee requested the questionnaires to be redrafted to include the range of all ethnicities in the options.

Response 5: Due to the clarification of the questionnaire in lined with the ethics committee requirements I now enclosed a revised version 2 (See MRPs Questionnaire version 2.0 with track changes and final version 2.0 attached).

The MRPs Questionnaire has been used in previous published studies for Asian patients (Sidi et al., 2009; Opara et al., 2010) (See abstracts of these two articles attached).

Within the scope of the study and time frame, the following ethnic minorities will be included: Asian groups which include people whose ancestry is from the following backgrounds, irrespective of their place of birth: Indian, Pakistani, Bangladeshi, Chinese and any other Asian background whereas Middle Eastern groups include people whose ancestry is from the following backgrounds Arabs, Iranian, Turkish and any other Middle Eastern backgrounds. These ethnicities were selected based on (1) high prevalence of chronic diseases such as Diabetes, Cardiovascular Rheumatoid and Respiratory diseases (Raleigh et al., 1997; Memon et al., 2003; Doll, 2005; Sidi et al., 2009), (2) high prevalence of co-morbidities which often lead to polypharmacy and complex medication regimens which require support for effective medicine management (Sidi et al., 2009); (3) evidence suggests that medicines related needs are sometimes poorly met for these groups.
Request 6: The Committee advised the researcher to reconsider the study objectives as they are not clear and hence difficult to achieve.

Response 6: study objectives have been clarified as follows:

a. To explore medicine use issues experienced by Asian and Middle Eastern patients.

b. To identify types of medicine-related problems (MRPs) experienced by patients of Asian and Middle Eastern origins.

c. To identify factors which may contribute to medicine-related problems experienced by Asian and Middle Eastern patients.

d. To categorise the MRPs and assess their potential clinical significance.

e. To inform service developments to reduce the occurrence of future MRPs for these populations.

Request 7: The Committee requested the engagement letter to the pharmacist to be redrafted as it is not clear.

Response 7: the engagement letter to the pharmacist has been redrafted to be clearer and a summary of the study will be sent with the engagement letter to community pharmacists. (See pharmacists invitation letter version 2.0 with track changes and final version 2.0 with a summary of the study attached).

Request 8: the Committee requested an independent peer review to be provided. The peer review should be done by a person external to the researcher’s institution.

Response 8: Professor Claire Anderson (Professor of Social Pharmacy, University of Nottingham) has provided an external peer review. (Please see her letter confirming review of protocol and her CV attached).

Request 9: The Committee advised to seriously reconsider identifying the participants based on their surnames.

Response 9: Patient will be identified by visual inspection of forename and surname together rather than surname only and ethnic identity will be confirmed by the patient later on. The majority of previous studies have used ‘surname’ and ‘forename’ together to identify patients from different ethnicities (Nicol et al., 1986; Rashid and Rogger, 1992; Martineau and White, 1998; Jessa and Hampshire, 1999; Platt and Tann, 1999; Chan C, 2000; Nanchahal et al., 2001; Bouwhuis and Moll, 2003; Fiscella and Fremont, 2006). The previous studies which have used surname and forename together have found that:

a. The technique have a high reliability in identifying ethnicity and religious backgrounds of South Asian populations living in the UK particularly if both first (forename) and second (surname) names were used (Nicol et al., 1986; Jessa and
Hampshire, 1999; Fiscella and Fremont, 2006) with sensitivity of 95% (87 of 92) and specificity of 89% (40 of 45) for distinguishing Asians from non-Asians and sensitivity of 98% (103 of 105) and specificity of 94% (30 of 32) for distinguishing Asians Muslims from non-Muslims (Nicoll et al., 1986; Martineau and White, 1998).

b. It is a valid method for distinguishing South Asians from general population (Martineau and White, 1998). The validation was done by comparing a combined name-method (surnames in combination with first names) with a reference method (ethnicity provided by health visitors). Health visitors have a high degree of contact with their clients, keep personal records, and are able to identify patients based on ethnic backgrounds.

c. It is also validated for distinguishing Turkish and Arabic children from general population (Bouwhuis and Moll, 2003). The validation was done by comparing a combined name-method (surnames in combination with first names) and surnames only with a reference method (ethnicity by parents' country of birth). The validity of both name methods and the measurements of agreement ($) of both comparisons were analysed. Turkish names showed good validity measurements between the combined name-method and the reference method (sensitivity of 81% and a positive predictive value of 86%). The Arabic names were distinguishable with a sensitivity of 77%, specificity of 99% and positive predictive value of 87%. Overall, the measurement of agreement showed a $ of 0.69 in the comparison between the classification of the combined names and the classification by parent's country of birth. The classification of the combined names (=$0.69) had slightly better validity and strength of agreement than the classification by surnames only (=$0.67). The sensitivity of the Turkish group increased from 72 to 81% by adding the first name.

d. The technique has a good potential to identify individuals of Chinese origin (Choi et al., 1993; Harland et al., 1997). In the source data set, at a cutoff level of 100 for males (217 surnames) and females (210 surnames), both sensitivity and the positive predictive value of the surname lists for males and females were very high, above 80%, and the positive likelihood ratio was above 600. In the test data set and using the same surname lists, the sensitivity, positive predictive value, and positive likelihood ratio remained at a high level: 73%, 81%, and 603, respectively, for males; and 73%, 84%, and 772, respectively, for females.

However, this technique has also disadvantages such as the following:

a. Identifying ethnic origin based on visual inspection of names needs expert judgment (i.e. people familiar with ethnic minorities' names) (Nicoll et al., 1986). Judgment in this study will be made by community pharmacists who serve the areas of Asian and Middle Eastern communities and thus they have a good knowledge and high degree of contact with their patients and are able to identify patients based on ethnic backgrounds. So the validity of choosing eligible ethnic minorities is likely to be high in this study.

b. The method of name selection employed largely failed (was insensitive) to identify Afro-Caribbean descent. However, this population group is not included in this study.
c. Its operation depends on sufficient concentration of the ethnic group among residents in the area of the study. In this study we will select the community pharmacies located in Islington, Brent, Harrow, Luton and Bedfordshire areas, which have a high density of Asian and Middle Eastern ethnic patients.

d. It is acknowledged that it is less sensitive for married women and those who have changed their names.

Final statement: On balance this approach is appropriate and pragmatic. It has also been used in several published studies.

Request 10: the Committee advised to reconsider selecting the participants solely on the basis of the limited ethnicity.

10. Within the scope of the study and time frame, the following ethnic minorities will be included: Asian groups which include people whose ancestry is from the following backgrounds, irrespective of their place of birth: Indian, Pakistani, Bangladeshi, Chinese and any other Asian background whereas Middle Eastern groups include people whose ancestry is from the following backgrounds Arabs, Iranian, Turkish and any other Middle Eastern backgrounds. These ethnicities were selected based on (1) high prevalence of chronic diseases such as Diabetes, Cardiovascular Rheumatoid and Respiratory diseases (Raleigh et al., 1997; Memon et al., 2003; DoH, 2005; Sidi et al., 2009); (2) high prevalence of co-morbidities which often lead to polypharmacy and complex medication regimens which require support for effective medicine management (Sidi et al., 2009); (3) evidence suggests that medicines related needs are sometimes poorly met for these groups.

Request 11: The Committee advised that it would be a good idea to actually identify the so called “problems” before they approach the participants for such problems or conduct a research on it.

Response 11: The main aim of this study is to identify problems patients may have or have had with their medicines. A medicine related problem (MRP) has been defined as “any problem experienced by a patient that may impact on their ability to manage or take their medicines effectively” (Gordon et al., 2005). MRPs could include adverse drug reactions (ADRs) and drug interactions, unwanted side-effects, treatment failure, non-adherence and patients factors such as cognitive, physical and sensory problems and problems with access to services.

Request 12: the Committee advised to appoint the translators formally as the whole research depends on the interviews and therefore the information that comes through the interviews should be credible.

Response 12: The study will utilise the routine practice used by community pharmacists when providing services to patients from Asian and Middle Eastern origin who do not speak English or have a language barrier. This may involve a community pharmacist or other pharmacy staff who assists in communicating with the patient during the interview. Where translation or interpretation is required, the interviews will be validated by the research team which include speakers of Arabic, Farsi, Panjabi, Hindi

Version 2

REC Reference 11/LO/1391

12/09/2011
and Urdu. This will be done by playing back a sample of audio-recorded interviews to the research team who speaks the same language as the patient.

I am looking forward to hear from you and please if you have any questions, do not hesitate to contact me.

Yours sincerely,

Miss Faten Alhomoud
Department of Practice and Policy,
School of Pharmacy,
University of London
Entrance A,
Mezzanine Floor,
British Medical Association (BMA)
Tavistock Square, London
WC1H 9JP
Mobile: 07955367688
Email: faten.alhomoud@live.pharmacy.ac.uk
Appendix 18: The letter of favourable opinion from the NHS REC.

17 October 2011

Miss Faten Alhomoud
Department of Practice and Policy,
School of Pharmacy, University of London
Entrance A, Mezzanine Floor,
British Medical Association (BMA)/Tavistock
Tavistock Square, London
WC1H 6JP

Dear Miss Alhomoud,

Study title: Medicine Use and Medicine Related Problems experienced by Ethnic Minority Patients with Chronic Diseases in Primary Care

REC reference: 11/LO/1391

Protocol number: N/A

Thank you for your letter of 12 September 2011, responding to the Committee’s request for further information on the above research and submitting revised documentation.

The further information was considered in correspondence by a sub-committee of the REC. A list of the sub-committee members is attached.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Ethical review of research sites

NHS sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see “Conditions of the favourable opinion” below).

Non-NHS sites

Conditions of the favourable opinion

The favourable opinion is subject to the following conditions being met prior to the start of the study.
The Committee agreed that you have attempted to answer all the comments of the Committee.

The Committee was not entirely convinced with the revised peer review provided. The Committee however did agree that first paragraph is the best summary of the purpose of the research.

The Committee is still not convinced by the idea of identification of potential participants by name. You assume that by looking at the first as well as the family name rather than just the family name will make everything easier. The Committee agreed that it is likely to cause more confusion as people from ethnic minorities often give themselves ‘English’ names on the grounds that their colleagues and friends will struggle less to pronounce them and a badly mangled English name matters less than a badly mangled true name.

The Committee agreed that it seems a bit basic and unscientific to approach the above issue the way it has been.

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission (“R&D approval”) should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements.

Guidance on applying for NHS permission for research is available in the Integrated Research Application System or at http://www.riforum.nhs.uk.

Where a NHS organisation’s role in the study is limited to identifying and referring potential participants to research sites (“participant identification centre”), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of approvals from host organisations.

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

<table>
<thead>
<tr>
<th>Document</th>
<th>Version</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covering Letter</td>
<td></td>
<td>08 August 2011</td>
</tr>
<tr>
<td>Covering Letter</td>
<td></td>
<td>12 September 2011</td>
</tr>
<tr>
<td>Evidence of insurance or indemnity</td>
<td></td>
<td>07 September 2010</td>
</tr>
<tr>
<td>Interview Schedules/Topic Guides</td>
<td>1</td>
<td>10 June 2011</td>
</tr>
<tr>
<td>Investigator CV</td>
<td></td>
<td>08 August 2011</td>
</tr>
<tr>
<td>Investigator CV</td>
<td></td>
<td>10 October 2011</td>
</tr>
<tr>
<td>Letter from Sponsor</td>
<td></td>
<td>08 August 2011</td>
</tr>
<tr>
<td>Letter of invitation to participant</td>
<td>1</td>
<td>10 June 2011</td>
</tr>
<tr>
<td>Letter of invitation to participant</td>
<td>2</td>
<td>12 September 2011</td>
</tr>
</tbody>
</table>
Appendix 19: NHS R & D form.

NHS R&D Form

<table>
<thead>
<tr>
<th>Welcome to the Integrated Research Application System</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRAS Project Filter</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>The integrated dataset required for your project will be created from the answers you give to the following questions. The system will generate only those questions and sections which (a) apply to your study type and (b) are required by the bodies reviewing your study. Please ensure you answer all the questions before proceeding with your applications.</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Please enter a short title for this project (maximum 70 characters)</td>
</tr>
<tr>
<td>Medicine Related Problems experienced by Ethnic Minority Populations</td>
</tr>
<tr>
<td>1. Is your project research?</td>
</tr>
<tr>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>2. Select one category from the list below:</td>
</tr>
<tr>
<td>☐ Clinical trial of an investigational medicinal product</td>
</tr>
<tr>
<td>☐ Clinical investigation or other study of a medical device</td>
</tr>
<tr>
<td>☐ Combined trial of an investigational medicinal product and an investigational medical device</td>
</tr>
<tr>
<td>☐ Other clinical trial or clinical investigation</td>
</tr>
<tr>
<td>☐ Study administering questionnaires/interviews for quantitative analysis, or using mixed quantitative/qualitative methodology</td>
</tr>
<tr>
<td>☐ Study involving qualitative methods only</td>
</tr>
<tr>
<td>☐ Study limited to working with human tissue samples, other human biological samples and/or data (specific project only)</td>
</tr>
<tr>
<td>☐ Research tissue bank</td>
</tr>
<tr>
<td>☐ Research database</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>If your work does not fit any of these categories, select the option below:</td>
</tr>
<tr>
<td>☐ Other study</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>2a. Please answer the following question(s):</td>
</tr>
<tr>
<td>a) Does the study involve the use of any ionising radiation? ☐ Yes ☐ No</td>
</tr>
<tr>
<td>b) Will you be taking new human tissue samples (or other human biological samples)? ☐ Yes ☐ No</td>
</tr>
<tr>
<td>c) Will you be using existing human tissue samples (or other human biological samples)? ☐ Yes ☐ No</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>3. In which countries of the UK will the research sites be located? (Tick all that apply)</td>
</tr>
<tr>
<td>☑ England</td>
</tr>
<tr>
<td>☐ Scotland</td>
</tr>
<tr>
<td>☐ Wales</td>
</tr>
<tr>
<td>☐ Northern Ireland</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>3a. In which country of the UK will the lead NHS R&amp;D office be located:</td>
</tr>
<tr>
<td>☑ England</td>
</tr>
<tr>
<td>☐ Scotland</td>
</tr>
</tbody>
</table>
4. Which review bodies are you applying to?
- [ ] NHS/HSC Research and Development offices
- [ ] Social Care Research Ethics Committee
- [x] Research Ethics Committee
- [ ] National Information Governance Board for Health and Social Care (NIGB)
- [ ] Ministry of Justice (MoJ)
- [ ] National Offender Management Service (NOMS) (Prisons & Probation)

5. Will any research sites in this study be NHS organisations?
- [ ] Yes  [ ] No

5a. Do you want your NHS R&D application(s) to be processed through the NIHR Coordinated System for gaining NHS Permission?
- [ ] Yes  [ ] No

*If yes, you must complete and submit the NIHR CSP Application Form immediately after completing this project flier, before proceeding with completing and submitting other applications.*

6. Do you plan to include any participants who are children?
- [ ] Yes  [ ] No

7. Do you plan at any stage of the project to undertake intrusive research involving adults lacking capacity to consent for themselves?
- [ ] Yes  [ ] No

*Answer: Yes if you plan to recruit participants aged 16 or over who lack capacity, or to retain them in the study following loss of capacity. Intrusive research means any research requiring consent in law. This includes use of identifiable tissue samples or personal information, except where application is being made to the NIGB Ethics and Confidentiality Committee to set aside the common law duty of confidentiality in England and Wales. Please consult the guidance notes for further information on the legal frameworks for research involving adults lacking capacity in the UK.*

8. Do you plan to include any participants who are prisoners or young offenders in the custody of HM Prison Service or who are offenders supervised by the probation service in England or Wales?
- [ ] Yes  [ ] No

9. Is the study, or any part of the study, being undertaken as an educational project?
- [ ] Yes  [ ] No

9a. Is the project being undertaken in fulfilment of a PhD or other doctorate?
- [ ] Yes  [ ] No

10. Will this research be financially supported by the United States Department of Health and Human Services or any of

84253257452/14/174
<table>
<thead>
<tr>
<th>11. Will identifiable patient data be accessed outside the clinical care team without prior consent at any stage of the project (including identification of potential participants)?</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ] Yes  [ ] No</td>
</tr>
</tbody>
</table>

---

**NHS R&D Form**

**IRAS Version 3.1**

its divisions, agencies or programs?

[ ] Yes  [ ] No
Integrated Research Application System
Application Form for Research administering questionnaires/interviews for quantitative analysis or mixed methodology study

NHS/HSC R&D Form (project information)

Please refer to the Submission and Checklist tabs for instructions on submitting R&D applications.

The Chief Investigator should complete this form. Guidance on the questions is available wherever you see this symbol displayed. We recommend reading the guidance first. The complete guidance and a glossary are available by selecting Help.

Please define any terms or acronyms that might not be familiar to lay reviewers of the application.

Short title and version number: (maximum 70 characters - this will be inserted as header on all forms)
Medicine Related Problems experienced by Ethnic Minority Populations

PART A: Core study information

1. ADMINISTRATIVE DETAILS

A1. Full title of the research:
Medicine Use and Medicine Related Problems experienced by Ethnic Minority Patients with Chronic Diseases in Primary Care

A2-1. Educational projects

Name and contact details of student(s):

Student 1

Title: Forename/Initials Surname
Miss Fatem Alhomoud

Address: Department of Practice and Policy, School of Pharmacy, University of London
Entrance A, Mezzanine Floor, British Medical Association (BMA)/Tavistock House
Tavistock Square, London
Post Code: WC1H 9JP
E-mail: fatem.alhomoud@live.pharmacy.ac.uk
Telephone: 07955367688
Fax:

Give details of the educational course or degree for which this research is being undertaken:
Name and level of course/degree:
PhD
Name of educational establishment:
The School of Pharmacy, University of London

Name and contact details of academic supervisor(s):
NHS R&D Form

Academic supervisor 1

Title: Forename/Initials Surname
Dr. Zoe Aslanpour
Address: School of Pharmacy, University of Hertfordshire
College Lane Campus
Hatfield, Herts
Post Code: AL10 9AB
E-mail: Z.Aslanpour@herts.ac.uk
Telephone: 01707284563
Fax

Academic supervisor 2

Title: Forename/Initials Surname
Professor: Soraya Dhillon
Address: School of Pharmacy, University of Hertfordshire
College Lane Campus
Hatfield, Herts
Post Code: AL10 9AB
E-mail: s.dhillon@herts.ac.uk
Telephone: 01707286105
Fax

Academic supervisor 3

Title: Forename/Initials Surname
Professor: Felicity Smith
Address: Department of Practice and Policy, School of Pharmacy, University of London
Entrance A, Mezzanine Floor, British Medical Association (BMA)Tavistock House
Tavistock Square, London
Post Code: WC1H 9JP
E-mail: felicity.smith@pharmacy.ac.uk
Telephone: 02078741288
Fax: 02073875693

Please state which academic supervisor(s) has responsibility for which student(s):
Please click "Save now" before completing this table. This will ensure that all of the student and academic supervisor
details are shown correctly.

<table>
<thead>
<tr>
<th>Student(s)</th>
<th>Academic supervisor(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student 1</td>
<td>Miss Fatem Alhamoud</td>
</tr>
<tr>
<td></td>
<td>Dr. Zoe Aslanpour</td>
</tr>
<tr>
<td></td>
<td>Professor Soraya Dhillon</td>
</tr>
<tr>
<td></td>
<td>Professor Felicity Smith</td>
</tr>
</tbody>
</table>

A copy of a current CV for the student and the academic supervisor (maximum 2 pages of A4) must be submitted with the application.

A2-2. Who will act as Chief Investigator for this study?

☐ Student
**A3-1. Chief Investigator:**

<table>
<thead>
<tr>
<th>Title</th>
<th>Forename/Initials Surname</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Miss Faten Alhomoud</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Post</th>
<th>Department of Practice and Policy, School of Pharmacy, University of London</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualifications</td>
<td>MSc in Clinical Pharmacy and BSc in Pharmacy</td>
</tr>
<tr>
<td>Employer</td>
<td>Department of Practice and Policy, School of Pharmacy, University of London</td>
</tr>
<tr>
<td>Work Address</td>
<td>Entrance A, Mezzanine Floor, British Medical Association (BMA) Tavistock House Tavistock Square, London</td>
</tr>
<tr>
<td>Post Code</td>
<td>WC1H 9JP</td>
</tr>
<tr>
<td>Work E-mail</td>
<td><a href="mailto:faten.alhomoud@live.pharmacy.ac.uk">faten.alhomoud@live.pharmacy.ac.uk</a></td>
</tr>
<tr>
<td>* Personal E-mail</td>
<td><a href="mailto:f.k.alhomoud@gmail.com">f.k.alhomoud@gmail.com</a></td>
</tr>
<tr>
<td>Work Telephone</td>
<td>07955367688</td>
</tr>
<tr>
<td>* Personal Telephone/Mobile</td>
<td>07955367688</td>
</tr>
</tbody>
</table>

*This information is optional. It will not be placed in the public domain or disclosed to any other third party without prior consent. A copy of a current CV (maximum 2 pages of A4) for the Chief Investigator must be submitted with the application.*

**A4. Who is the contact on behalf of the sponsor for all correspondence relating to applications for this project?**

This contact will receive copies of all correspondence from REC and R&D reviewers that is sent to the CI.

<table>
<thead>
<tr>
<th>Title</th>
<th>Forename/Initials Surname</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Miss Faten Alhomoud</td>
</tr>
</tbody>
</table>

| Address | The Department of Practice and Policy, School of Pharmacy, University of London Entrance A, Mezzanine Floor, British Medical Association (BMA) House Tavistock Square, London |
| Post Code  | WC1H 9JP |
| E-mail | faten.alhomoud@live.pharmacy.ac.uk |
| Telephone | 07955367688 |

**A5-1. Research reference numbers. Please give any relevant references for your study:**

<table>
<thead>
<tr>
<th>Applicant's/organisation's own reference number, e.g. R &amp; D (if available):</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sponsor's/protocol number:</td>
<td>N/A</td>
</tr>
<tr>
<td>Protocol Version:</td>
<td>1</td>
</tr>
<tr>
<td>Protocol Date:</td>
<td>10/06/2011</td>
</tr>
</tbody>
</table>

Funder's reference number:
- International Standard Randomised Controlled Trial Number (ISRCTN):
- ClinicalTrials.gov Identifier (NCT number):
- European Clinical Trials Database (EutraCT) number:
- Project website: N/A
A5.2. Is this application linked to a previous study or another current application?

☐ Yes  ☐ No

Please give brief details and reference numbers.

2. OVERVIEW OF THE RESEARCH

To provide all the information required by review bodies and research information systems, we ask a number of specific questions. This section invites you to give an overview using language comprehensible to lay reviewers and members of the public. Please read the guidance notes for advice on this section.

A6.1. Summary of the study. Please provide a brief summary of the research (maximum 300 words) using language easily understood by lay reviewers and members of the public. When the research is reviewed by a REC within the UK Health Departments Research Ethics Service, this summary will be published on the website of the National Research Ethics Service following the ethical review.

Medicine-related problems (MRPs) have been identified in various sectors of healthcare, some of these problems include adverse drug reactions (ADRs) and drug interactions, unwanted side effects, treatment failure, non-adherence, patients’ issues such as cognitive, physical and sensory problems and problems with access to services. (Home et al., 1995; Johnson et al., 1997; Winterstein et al., 2002; Paulino et al., 2004; Gordon et al., 2005; Szczepura, 2005; Gordon et al., 2007; Krähenbühl et al., 2008). According to the literature, the frequency of MRPs in the community is between 2.5 - 65% of patients (Paulino et al., 2004; Gordon et al., 2005; Szczepura, 2005; Gordon et al., 2007; Krähenbühl et al., 2008). Conversely, the frequency of MRPs identified in the hospital setting is between 2.5 - 30% of patients (Home et al., 1995; Johnson et al., 1997; Winterstein et al., 2002). MRPs, detected in both in hospital and community settings, are responsible for morbidity, mortality, (Buajordel et al., 2001; Mannheimer et al., 2006; Viskil et al., 2006), reduce the quality of life (Ernst et al., 2003; Viskil et al., 2006) and increase health expenses for patient and for society due to subsequent morbidity, extra general practitioner (GP) consultations and hospital admissions (Gordon et al., 2005; Mannheimer et al., 2006; Viskil et al., 2006). Evaluating MRPs and their causes may offer a much needed new approach to support their reduction, given that a high percentage of these problems have been considered preventable (Winterstein et al., 2002). An understanding of context of MRPs from patient’s perspective is essential in order to identify how patients may be supported in the use of their medicines.

Aim: the aim of this study is to identify and evaluate MRPs experienced by Asian and Middle Eastern patients in primary care and to identify how patients may be supported in the use of their medicines,

Setting: Community pharmacies and patients’ homes in the following in the areas: Islington, Brent, Harrow and Bedfordshire.

Method: This is an in-depth study that will take a mixed (quantitative and qualitative) approach to examine medicine related problems in Asian and Middle Eastern patients with chronic diseases in primary care. An anticipated number of up to 200 patients will be interviewed by the chief investigator to identify potential MRPs and their causes. Two validated instruments will be used as well as an agreed interview schedule to identify MRPs using semi-structured interviews using:

- Screening tool for identification of medicine related problems (Gordon et al., 2005).
- Morisky 8-items tool (Morisky et al., 2008).

A6.2. Summary of main issues. Please summarise the main ethical and design issues arising from the study and say how you have addressed them.

• A clear outline of the study will be provided to all eligible patients who wish to participate. This outline will include the purpose of the study, other individuals from whom relevant information may be obtained, and how data will be collected, anonymised, analysed and disseminated.

• Informed written consent will be obtained prior to commencing the face-to-face semi-structured interview. The patients will be reminded that they can withdraw from the study at any time without providing a reason.

• The interview will be audio-taped with participants’ authorisation. For participants who decline to an audio tape...
NHS R&D Form

3. PURPOSE AND DESIGN OF THE RESEARCH

A7. Select the appropriate methodology description for this research. Please tick all that apply:

- [ ] Case series/ case note review
- [ ] Case control
- [ ] Cohort observation
- [ ] Controlled trial without randomisation
- [ ] Cross-sectional study
- [ ] Database analysis
- [ ] Epidemiology
- [ ] Feasibility/ pilot study
- [ ] Laboratory study
- [ ] Metaanalysis
- [x] Qualitative research
- [ ] Questionnaire, interview or observation study
- [ ] Randomised controlled trial
- [ ] Other (please specify)

A10. What is the principal research question/objective? Please put this in language comprehensible to a lay person.

What are the types and causes of medicine-related problems (MRPs) experienced by Asians and Middle Eastern populations with chronic diseases?

A11. What are the secondary research questions/objectives if applicable? Please put this in language comprehensible to a lay person.

What resolution strategies can be employed to minimise the occurrence of MRPs?
A12. What is the scientific justification for the research? Please put this in language comprehensible to a lay person.

The ethnic minority populations in the UK are growing substantially as a consequence of continued immigration and high birth rate. In 2001, according to the Census, about 7.6% of the population in the United Kingdom were of black and ethnic minority origin (ONS, 2004). This number is higher than the one in 1991 estimates by nearly 2%. The proportion of black and other ethnic minorities is expected to rise from 8% of the population, as recorded in the 2001 census, to 27% by 2051 and to 43% by 2066 (Coleman, 2010). Nearly half (48%) of the total ethnic minority population lives in the London region, where they comprised 29% of all residents (ONS, 2004). By 2031, 39% of London's population is projected to be from an ethnic minority group (GLA, 2010). This compares with 32 per cent in 2006 and 29 per cent in 2001 (GLA, 2010).

The Office for National Statistics (ONS) has defined ethnic minority groups as “a collectively within a larger population having real or putative common ancestry, memories of a shared past, and a cultural focus upon one or more symbolic elements which define the group’s identity, such as kinship, ancestry, history, religion, language, shared territory, nationality or physical appearance.” (ONS, 2003). Ethnic Minority groups include Indians, Pakistanis, Bangladeshis, British-Asian, Other-Asian, Black-Caribbeans, Black-Africans, Black-British, Black-Other, Chinese, ‘Mixed’ and “Other” groups (ONS, 2005; ONS, 2004).

People from ethnic minorities tend to perceive themselves as less healthy than those in the general UK population (NHS, 2005). For example, about one in seven Bangladeshi men (15%), and one in ten Pakistani men (10%), reported ‘bad’ or ‘very bad’ health. Similarly, around one in seven Bangladeshi and Pakistani women reported bad/very bad health (14% and 15% respectively). Ethnic Minority populations also have a higher prevalence of chronic diseases including diabetes, cardiovascular diseases (CVD), mental health, rheumatoid and respiratory disease (Memon et al., 2002). For example, those from South Asian communities have high rates of heart disease and non-insulin-dependent (type 2) diabetes occurring at an earlier age and being associated with premature and high mortality (Barnett et al., 2006; Gholap et al., 2011). The South Asian community suffers from a four to six fold increased prevalence of Type 2 Diabetes Mellitus (T2DM) (Barnet et al., 2008). South Asians also suffer from a high rate of ischaemic heart disease (IHD) including myocardial infarction and angina. For example, South Asian men have shown a 30-40% higher prevalence of ischaemic heart disease than men in the general population (Barnet et al., 2008).

Treatment for these conditions can often be complex, having a range of medicines to manage their condition and frequently lead to medicine-related problems (MRPs), many studies have found that patients do not manage their medicines effectively (Cleessens et al., 1995; Grases and Bates, 1999; Hammetlin et al., 2007; Krähenbühl et al., 2008). The definitions of MRPs are wide and can be divided into different problems ranging from the prescribing process through to obtaining supplies, monitoring for appropriateness and patient behaviours which influence their use. In addition, patients may also feel unable to communicate their needs to healthcare professionals, a problem exacerbated by short (perceived or actual) consultation times (Barry et al., 2009).

A medicine related problem has been defined as "an event or circumstance involving drug treatment that actually or potentially interferes with the patient's experiencing an optimum outcome of medical care" (Hepler and Strand, 1990) or as "any problem experienced by a patient that may impact on their ability to manage or take their medicines effectively" (Gordon et al., 2005). The last definition by Gordon et al. is a broad definition of MRPs and focuses on patients' experience and perspective. MRPs include Adverse Drug Reactions (ADRs) and drug interactions, unwanted side-effects, treatment failure, non-adherence and patients factors such as cognitive, physical and sensory problems and problems with access to services.

Medicine-related problems have been identified in various healthcare settings and the experience of this phenomenon is global. The frequency of MRPs in the community, reported in the literature, is between 2.5 - 65% including prescribing errors (Gordon et al., 2005; Gordon et al., 2007), uncertainty and lack of knowledge about medicines (Paulino et al., 2004; Krähenbühl et al., 2008), difficulty in managing side-effects (Paulino et al., 2004; Krähenbühl et al., 2008), problems with access to services, difficulty in administration of medicines due to disability or problems related to understanding of information supplied with medication (Szczepura, 2005; Gordon et al., 2007). Conversely, the frequency of MRPs in the hospital setting was reported between 2.5 – 30%, which includes inappropriate prescribing, non-adherence, inadequate monitoring that leads to treatment failure, adverse drug reactions or side-effects (Horne et al., 1998; Johnson et al., 1997; Weinert et al., 2002). The variation found between studies may result from differences in the study settings (e.g. primary or secondary care), population groups, sampling procedures or study methodology. For instance, there is a range of definitions associated with MRPs which range from narrow clinical definitions to more holistic approaches that address the contexts in which problems arise. Variation can also be seen in data sources and methods of data collection such as using patient notes or face-to-face interviews. It has been found that MRPs have been responsible for morbidity, mortality in both hospital and community settings (Bujaert et al., 2001; Mannheimer et al., 2006; Víktl et al., 2006), reduce the quality of life (Emst et al., 2003; Víktl et al., 2006) and increase health expenses for patient and the government associated with a rise in morbidity, extra general practitioner (GP) consultations and hospital admissions (Gordon et al., 2005; Mannheimer et al., 2006; Víktl et al., 2006). There has been an increasing awareness that ethnic minority patients are one of the vulnerable groups who...
may experience medicine-related problems ranging from: patients not understanding how to take their medicines, cultural beliefs towards their health condition which could lead to non-adherence to medicines, adverse drug reactions and administration problems, language barriers, literacy differences, not knowing how to obtain a further supply and problems in access of health care services (Szczepura, 2006; Gordon et al., 2007; Siddi et al., 2009; Opare et al., 2010).

The role of patients and health-care professionals is vital to achieve effective chronic disease management and to reduce MRPs. For example, the government has some drivers in place such as the “Expert Patients Programme” which was established following the recognition that patients often have more knowledge than their clinicians about their own conditions and thus making patients play a bigger part in managing their own condition (DoH, 2001). This was seen as an opportunity to put to good use the knowledge and experience of the patient effectively and thus give them more confidence and empowerment to manage chronic diseases. Results so far include a decrease in GP consultations, outpatient visits, accident and emergency attendance (DoH, 2004). Health care professionals also have an important role in chronic disease management via effective medicine management. This includes evidence based and appropriate prescribing, adequate monitoring, improve patient compliance, improve communication and provision of sufficient patient information, patient education, and regular review of systems and process. For example, involvement of pharmacists in the medication review process has been tested in a number of randomised controlled trials and the results have been positive especially regarding the identification or the resolution of MRPs (Kirsta et al., 2001), reduction in prescribing costs (Zernansky et al., 2001) and number of drugs prescribed (Holland et al., 2007), improving patients knowledge with regards to their medication and adherence patterns (Holland et al., 2007). It must however be noted that these pharmacists had specific training, full access to all relevant resources and information.

Generally, it can be said that ethnic groups are associated with cultural traits and health profiles that presents a challenge to health care practitioners and policy makers in terms of achieving equitable access hence presenting a difficult in identifying and resolving MRPs (Szczepura A, 2005). Bridging the health gap for individuals in these populations is now an important priority especially when it comes to identification and resolving MRPs, increasing life expectancy and the number of years from good health. However, very little is known on what influences the MRPs among the ethnic minority populations. Additionally, majority of studies conducted to identify and resolve MRPs have been from a clinical perspective and examined patients of all ages or focused on elderly population but none were focused on ethnic minority groups (Zernansky et al. 2001; Passarelli et al., 2005; Gallagher et al., 2007). Moreover, patients’ views and experiences were the focus in only small number of studies (Paulino et al., 2004; Haugbølle and Sørensen, 2006) and were usually restricted to compliance issues (Schneider et al., 1996, Grymonpre et al., 1996). As whole studies have not examined in detail the problems arising from the patient’s use of health services which may also ultimately influence their ability to manage their medicines effectively.

For the reasons discussed earlier there is potential for more to be done to reduce MRPs in ethnic minority groups and improve elements of the services made available in preventing co-morbidity. Also, promote access to services which in the long run may help prevent unnecessary hospital admissions, re-admissions and bridge the gap between services available to patients in primary and secondary care. It is essential to acknowledge, understand and address ethnic minority patients’ experience and views regarding MRPs so can support them on the appropriate use of medicines. Thus, the aim of this study is to identify and evaluate MRPs experienced by Asian and Middle Eastern patients in primary care and to identify how patients may be supported in the use of their medicines. The study will give a better insight on the problems the Asian and Middle Eastern minority groups are facing in regards to managing their medicines. The study will provide valuable information to the HCPs to strengthen their ability to deliver routine healthcare services.

The reason behind focusing on Asian groups in particular because between 2006 and 2031 the largest percentage of ethnic minority groups increases are projected to be in the Chinese, Bangladeshi and Pakistani ethnic groups, which will increase by 55 per cent, 51 per cent and 90 per cent respectively (GLA, 2010). In fact during the same period, the highest increase of Ethnic Minority groups is projected to be in the ‘Other’ ethnic group by 79% (GLA, 2010). The ‘Other’ ethnic category in the Census form was not broken down to determine which specific ethnic groups it includes and also there was not tick-box for the Middle Eastern groups in the Census form; therefore, it is more likely that the Middle Eastern groups fall into the ‘Other’ category especially because of political instability in the Middle-East which increases percentage of immigration to the UK among these groups. There is also a further reason behind choosing Middle Eastern groups which is because these groups are new to the British society and very little are known on what influence the Medicine related problems among these groups. Asian groups in this study include Indian, Pakistani, Bangladeshi, Chinese and Other Asian whereas Middle Eastern groups include Arabs, Iranian, Turkish and Other Middle Eastern countries.

References


A13. Please summarise your design and methodology. It should be clear exactly what will happen to the research participant, how many times and in what order. Please complete this section in language comprehensible to the lay person. Do not simply reproduce or refer to the protocol. Further guidance is available in the guidance notes.

Study Aim
The aim of this study is to identify and evaluate MRP(s) experienced by Asian and Middle Eastern patients in primary care and to identify how patients may be supported in the use of their medicines.

Study Objectives
1) To identify different types of medicine-related problems (MRPs) as well as to categorise the types of MRPs experienced by Asian and Middle Eastern patients and the medicines involved.
2) To identify factors causing medicine-related problems associated with Asian and Middle Eastern groups of patients.
3) To examine possible strategies on how to reduce the occurrence of future MRPs.

Methods
Study design
This is an in-depth study that will take a mixed (quantitative and qualitative) approach to examine medicine-related problems in Asian and Middle Eastern patients with chronic diseases in primary care; the study will identify problems that these patients are facing in managing their condition and to identify medicine-related problems. The study will describe the issues from the perspective of the patients and in the context of their situations and circumstances. In order to assess MRPs from the patients' perspective, semi-structured interview tools will be employed including: Screening tool for identification of MRPs (Gordon et al., 2005), Morisky 8-items tool (Morisky et al., 2008) and an agreed interview schedule. Pharmacy records which include Patient Medication Records (PMRs) and Medicine Use review reports (MUR) will be reviewed to see whether more MRPs can be identified.

Study setting
Depending on patient's wish, this study will be conducted either in community pharmacies or patients' homes located in the following areas: Islington, Brent, Harrow, Luton and Bedfordshire.

Study participant and recruitment
I. Recruitment of community pharmacies
   • The sampling procedure for recruiting community pharmacies in this study is a purposive sample. This will be carried out by asking Islington Primary Care Trust (PCT), Brent PCT, Harrow PCT, Luton PCT and Bedfordshire PCT to provide the research student with a list of community pharmacies located in their areas based on the following inclusion criteria:
     □ Located in areas (wards) which have a population diverse in age and socio-economic characteristics and presence of Asian and Middle Eastern minority groups.
     □ Community pharmacies conducting Medicine Use Review (MUR), and thus having a private consultation room, allowing the semi-structured interview to take place, in a quiet and peaceful environment.
   • Primary Care Trusts in Islington, Brent, Harrow, Luton and Bedfordshire were selected based on diversity of age group in the population, the proportion of the population belonging to ethnic minority groups (i.e. having a high percentage of ethnic minority populations than the national average) and diversity in terms of socio-economic status (according to the National Statistics Socio-Economic Classification (NS-SEC), which provides an indication of socio-economic position based on occupation) (ONS, 2010).
   • From the list obtained, all the community pharmacies will be invited to take part in the study by sending an invitation letter addressed to each one of them. A sample of the invitation letter to the community pharmacists is attached as appendix 1.
     • The invitation letter will include a brief description of the study's aim and objectives, study procedures, how they will contribute and what they need to do. It will also include contact details of the research team and a reply slip with prepaid envelope to return to the chief investigator. The community pharmacists can also email or phone the chief investigator if they wish to participate instead of sending the reply slip.
     • Upon receiving the reply from community pharmacies expressing their willingness to take part in the study, the first 15 community pharmacies agree to take part will be contacted by the chief investigator in order to recruit patients.
     • A letter will be sent by the chief investigator to the rest of the responding pharmacies to thank them for responding and inform them that the required number for recruiting community pharmacies is achieved.
     • Flow chart of the design of the main study and Gantt chart are attached as appendices 2 and 3.
II. Recruitment of Patients
A purposive sample of patients will be recruited based on inclusion, exclusion, discontinuation criteria as follows:

Inclusion criteria:
- Being from Asian (i.e. Indian, Pakistani, Bangladeshi, Chinese or Other Asian) or Middle Eastern (i.e. Arab, Iranian, Turkish, or Other Middle Eastern) ethnic groups. This will be initially identified based on surname of patient and will be confirmed by the patient later on.
- Taking multiple medicines for Chronic Diseases (i.e. 3 or more prescribed medicines).
- Willing to take part and informed consent.
- Over 18 years old (no parental consent required).
- Languages to be spoken include (English, Arabic or Persian). Patients who cannot speak any of these languages pending availability of a translator who support them in giving the written consent and participating in the interview. Translator could be any of the following: a family member, friend, carer or pharmacist who can act as a translator after seeking the patient’s permission.

Exclusion criteria:
- Patients who are resident in a nursing or residential home.
- Patients who have a terminal illness and under the care of Macmillan nurses.
- Patients involved in another research.

Discontinuation criteria:
- Patients who withdraw from the study at any time after consenting.
- Patients who are unable to continue participating in the study due to significant deteriorating ill health or death.
- Patient’s recruitment will be carried out by three methods in each pharmacy and any of these methods will be used to recruit an average number of 20 patients per pharmacy. These methods include the following:
  1. Reviewing Medication Use Review (MUR) reports: a retrospective review of MUR reports that have been conducted in the last 6 months will be carried out by community pharmacists to identify a list of patient’s name and address that match inclusion criteria. The patients who meet the inclusion criteria, will be invited by community pharmacist. MUR form is attached as appendix 4.
  2. Reviewing Patient Medication Records (PMRs): a retrospective review of patient medication records (PMRs) held in the pharmacy database for the last 6 months will be carried out by community pharmacists to identify a list of patient’s name and address that match inclusion criteria. The patients who meet the inclusion criteria, will be invited by community pharmacist.
  3. Direct approach through the community pharmacist: the patients who present at the community pharmacy to have a prescription dispensed and meet the inclusion criteria, will be directly approached and invited by community pharmacist in the pharmacy. The Chief investigator will also help community pharmacists in recruiting patients through direct approach. Once patient identified and informed of the study by pharmacy staff, potential participants will be referred to the chief investigator to invite them to take part. The chief investigator will discuss with patient only after having agreed to this with pharmacist. The chief investigator will be rotating through community pharmacies.

- All the identified patients will be invited to take part in the study by sending or giving in person an invitation letter and a prepared information pack explaining that the patient need to participate in a semi-structured interview.
- The information pack will consist of a patient information sheet explaining the purpose of the study, study procedures and how it will be conducted, possible disadvantages and benefits from taking part, sponsorship and confidentiality of data and the chief investigator’s contact details. The information pack will also include a consent form, a pre-paid envelope with the chief investigator’s address and a photograph of the chief investigator so that the patients know who they will be expecting if they wish to take part in the study. Patient Invitation Letter, Patient Information Sheet and Patient Consent Form are attached as appendices 5, 6 and 7 respectively.
- The patients can also email or phone the chief investigator if they wish to take part instead of sending a reply slip.
- Adequate time duration (i.e. 72 hours) will be given to the patients to consider whether they wish to take part in the study which they can do by returning the reply slip or sending an email or phoning the research students.
- Patient, who express willingness to take part, will be contacted by the chief investigator and an agreed date, time and place will be arranged for the conduct of the semi-structured interview. An opportunity to ask questions will be provided.
- If the patient is unable to speak English, Arabic or Persian, access to a translator will be sought after seeking the patient’s permission.
- A written and signed consent form will be obtained by the chief investigator prior to commencing the semi-structured interview.
- A follow-up letter will be sent to non-responders to remind them to take part. This will be done after three weeks of sending initial invitation letter and prepared information pack.

Sample size
- A formal sample size calculation was carried out to indicate the required number of participants. The frequency of MURs in the community, reported in the literature, is between 2.5 - 65% (Gordon et al., 2005).
- In Gordon et al. Study (2005), 70% of patients agreed to participate in the screening interviews in the pharmacies. Therefore, the formal sample size calculation for this study was carried out based on response rate of (70%) for the screening interviews (Gordon et al., 2005). The aim in this study will be to recruit an average number of 200 patients for semi-structured interview. This was done as follows:
  - The first 15 community pharmacies, that agree to take part in the study, will be recruited. Every pharmacy from 15 will be asked to recruit an average number of 20 patients using any of the three methods for patient's recruitment. This will
result in recruiting 300 patients for the semi-structured interview. Based on 70% response rate, around 200 (n=210) patients will be interviewed. The sample size of 200 patients will yield adequate power of 85% to allow clinically significant differences to be statistically significant and to make sample size representative. The power of the sample size was calculated using the following formula:

\[ P = \frac{1}{z^2 \cdot \left( \frac{\sigma^2}{n} \right)} \]

With a 95% confidence interval (z=1.96) and interval no wider than 0.05 (m). P is the power and n is the sample size.

Data Collection
- After obtaining a patient’s informed (written) consent, an eligible patient will be interviewed in the community pharmacy by using two tools. The tools that will be used to identify MRP’s are ones that have been used in previous studies and have been validated. These validated tools include the following:
  - Screening tool for identification of medicine related problems (Gordon et al., 2005).
  - Morisky 8-items tool (Morisky et al., 2008).
  - An agreed interview schedule will also be used to concentrate in-depth on context of MRP’s.
  - The MRP screening tool, Morisky 8-items and an example of the agreed interview schedule are attached as appendices 8, 9 and 10 respectively.
- The semi-structured face-to-face interview will consist of two parts. The first part will involve administering the screening tool for MRP’s (Gordon et al., 2005). The second part will involve administering the Morisky 8-items tool and agreed interview schedule to concentrate in-depth on context of MRP’s.
- The first part of the interview (screening tool for MRP’s) will be administered for all the patients whereas the second part (Morisky 8-items and agreed interview schedule) will be administered for those who are willing to continue the second part and complete the full interview.
- The first part of the interview will take about 15 minutes and the second part will take about 30 minutes.
- The semi-structured interview will be conducted on one occasion either in a private consultation area in the community pharmacy or in patients’ homes depending on patient’s wish at a mutually agreeable time.
- Informed consent (verbal) and permission to audio record interview will be obtained prior to commencing the semi-structured interviews and chief investigator field notes will also be taken. Where a patient disagrees with having their interview recorded, only chief investigator field notes will be taken.
- Information obtained from the semi-structured interviews will be collected after each interview on one occasion only.
- Once the semi-structured interview is completed the patients will be grouped into those with at least one MRP and those with no apparent problems.
- After obtaining informed consent (written), the chief investigator will also review a patient's medication records and MUR reports held in the pharmacy in order to identify any further problems and to validate the results of the semi-structured interview.
- The identified MRP’s will be classified using Gordon et al’s (2005) MRP’s classification system.
- The results obtained from MUR records, PMRs in the pharmacy and semi-structured interview will be analysed.
- An expert panel consisting of two pharmacists and a GP physician will be formed to conduct the following:
  - Make a final decision on the presence of a MRP.
  - Help the research student in finalise classification of MRP’s.
  - Assess the causes and importance (i.e. clinical significance) of MRP’s identified.
- This will be done by preparing case summary (vignettes) using information from:
  - Pharmacy records.
  - The semi-structured interview.
  - Case vignettes will enable expert panel review individual cases with a MRP effectively and categorise MRP’s observed using Gordon et al’s (2005) classification.
  - The expert panel will review only 10% of the patients.
  - The minor, moderate and major significance were chosen for this study (Balestrini et al., 1999). ‘Major’ will be defined as a problem that is potentially life-threatening or cause serious morbidity, ‘Moderate’ will be defined as a problem that threatens patient care but is not life-threatening whereas ‘minor’ will be defined as a problem that threatens patient care to a small extent or degree.

Validity of the results
The results obtained from pharmacy records (i.e. PMRs and MUR reports) and face-to-face semi-structured interview will be triangulated and analysed to validate the findings. The triangulated results will enable expert panel review individual cases with a MRP, categorise type, determine cause and significance of MRP’s and check the validity of the findings.

Reliability of the results
Only one researcher (chief investigator) will conduct semi-structured interviews to reduce internal bias. These interviews will be audio-taped. The supervisor will accompany the chief investigator and check the recordings for at least 10% of the interviews for reliability.

Sample representativeness
An attempt has been made to ensure that there is representation of all ethnic backgrounds listed in the protocol.
Generalisability
This study cannot capture the perspective of patients, who cannot speak English, Arabic or Persian unless they have translator which affects generalisability of the study.

Pilot study (preliminary fieldwork)
• The aim of the preliminary fieldwork is to assess the feasibility of methods and practicability of the instruments such as various data collection forms that will be used as well as to ensure that methods and procedures fulfil our objectives and are acceptable to practitioners and patients.
• The preliminary fieldwork will be conducted in at least 3 pharmacies. Two days visits at each pharmacy will be conducted to test logistics of running the project and reduce researcher bias. Two patients will be recruited and interviewed.
• During the pilot study the following points will be considered:
  □ Obtaining demographic details of community pharmacists and patients participating in the study such as number of pharmacists in the pharmacy, language they speak, number of patients visiting the pharmacy and their ethnicity, number of prescription, medical conditions of population sample and number of MUR performed. This will enable assessing the feasibility of the methods proposed and the likelihood of the anticipated outcomes being achieved.
  □ Assess the practicability of using pharmacies as potential sites for interviewing patients.
  □ Identify a workable method and time to recruit patients which will form the basis of the main study.
  □ To assess practicality of administering the validated MRP screening tool, 8-items Morisky and agreed interview schedule for this study and for these patients groups. This will allow assessment of any issues which may become apparent as well as the duration of administering these tools. The feasibility to transcribe and analyse the data sets obtained from semi-structured interview will also be considered.
  □ To assess the potential response rates that could be obtained.
  □ To assess the appropriateness of using the validated MRP screening tool, 8-items Morisky and agreed interview schedule, viability of audio recording, transcription, coding and analysis of data sets obtained.
  □ The logistics of preparing individual case summary and applying the Gordon et al. 2005 classification system for the categorisation of MRPs identified.

A14-1. In which aspects of the research process have you actively involved, or will you involve, patients, service users, and/or their carers, or members of the public?

☑ Design of the research
☐ Management of the research
☐ Undertaking the research
☐ Analysis of results
☑ Dissemination of findings
☐ None of the above

Give details of involvement, or if none please justify the absence of involvement.
We have two patients that agreed to act as critical reviewers (advisors) to this research protocol. They were involved in design of the research and dissemination of findings.

4. RISKS AND ETHICAL ISSUES

RESEARCH PARTICIPANTS

A15. What is the sample group or cohort to be studied in this research?

Select all that apply:
☐ Blood
☐ Cancer
☐ Cardiovascular
☐ Congenital Disorders
☐ Dementias and Neurodegenerative Diseases
☐ Diabetes

463
A17-1. Please list the principal inclusion criteria (list the most important, max 5000 characters).

Inclusion criteria:
- Being from Asian (i.e. Indian, Pakistani, Bangladeshi, Chinese or Other Asian) or Middle Eastern (i.e. Arab, Iranian, Turkish, or Other Middle Eastern) ethnic groups. This will be initially identified based on surname of patient and will confirmed by the patient later on.
- Taking multiple medicines for Chronic Diseases (i.e. 5 or more prescribed medicines).
- Willing to take part and informed consent.
- Over 18 years old (no parental consent required).
- Languages to be spoken include (English, Arabic or Persian). Patients who cannot speak any of these languages pending availability of a translator who support them in giving the written consent and participating in the interview. Translator could be any of the following: a family member, friend, career or pharmacist who can act as a translator after seeking the patient's permission.

A17-2. Please list the principal exclusion criteria (list the most important, max 5000 characters).

Exclusion criteria:
- Patient who is resident in a nursing or residential home.
- Patient who has a terminal illness and under the care of Macmillan nurses.
- Patient involved in another research.

RESEARCH PROCEDURES, RISKS AND BENEFITS

A18. Give details of all non-clinical intervention(s) or procedure(s) that will be received by participants as part of the research protocol. These include seeking consent, interviews, non-clinical observations and use of questionnaires.

Please complete the columns for each intervention/procedure as follows:
1. Total number of interventions/procedures to be received by each participant as part of the research protocol.
2. If this intervention/procedure would be routinely given to participants as part of their care outside the research, how many of the total would be routine?
3. Average time taken per intervention/procedure (minutes, hours or days)

4. Details of who will conduct the intervention/procedure, and where it will take place.

<table>
<thead>
<tr>
<th>Intervention or procedure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other</td>
<td>1</td>
<td>N/A</td>
<td></td>
<td>Community pharmacists will conduct a retrospective review of both MUR reports that has been conducted in the last 6 months and Patients Medication Records (PMRs) held in the pharmacy for the last six months to recruit patients who meet the inclusion criteria. Additionally, all patient who will present at the community pharmacy to have a prescription dispensed and meet the inclusion criteria will be approached directly by pharmacist or chief investigator to invite them to take part. The chief investigator will discuss with patient only after having agreed to this with pharmacist. All the identified patients will be invited to take part in the study by sending or giving in person an invitation letter and a prepared information pack explaining that the patients need to participate in a face-to-face semi-structured interview.</td>
</tr>
<tr>
<td>Other Questionnaire</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Semi-structured interview)</td>
<td>1</td>
<td>N/A</td>
<td></td>
<td>The chief investigator will administer a two validated tools which include screening tool for identification of MRPs (Gordon et al., 2005) and Morisky 8-items tool (Morisky et al., 2009) as well as an agreed interview schedule.</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td>The chief investigator will conduct a retrospective review of both MUR reports and Patients Medication Records (PMRs) held in the pharmacy for the identification of medicine-related problems.</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td>Individual case summary will be prepared by the chief investigator using information from pharmacy records (MUR reports and PMRs) and semi-structured interview, to enable expert panel review individual cases with a MRP effectively, categorise MRPs observed using Gordon et al. (2005) classification and assess significance of each MRP identified.</td>
</tr>
</tbody>
</table>

A21. How long do you expect each participant to be in the study in total?

2-8 weeks

A22. What are the potential risks and burdens for research participants and how will you minimise them?

For all studies, describe any potential adverse effects, pain, discomfort, distress, intrusion, inconvenience or changes to lifestyle. Only describe risks or burdens that could occur as a result of participation in the research. Say what steps would be taken to minimise risks and burdens as far as possible.

None

A23. Will interviews/ questionnaires or group discussions include topics that might be sensitive, embarrassing or upsetting, or is it possible that criminal or other disclosures requiring action could occur during the study?

☐ Yes  ☐ No

If Yes, please give details of procedures in place to deal with these issues:

Participants will be advised that they are free not to discuss any topics which they don’t feel comfortable discussing, such as topics they consider sensitive, embarrassing or upsetting. Participants will also be reminded that confidentiality and anonymity will be maintained. Where issues with regards to patient safety arises, every effort will be made to encourage participants to seek advice from the appropriate healthcare professional such as their GP or regular community pharmacist. With the participant’s permission, their GP and/or regular community pharmacist will be notified of potential risk of harm due to the participant’s medicine use. Participants will also be made aware before the interview commences that there is an obligation to inform the appropriate authority of any information disclosed in relation to activities against the law.

A24. What is the potential for benefit to research participants?
1. Identification of problems related to patient’s medicines management and their causes.
2. Improved understanding of medicines use to achieve a better health outcome and optimise safe medication practice in this group of patients.
3. Improved chronic disease management.
4. Empowered patients who will take responsibility in terms of monitoring/management of their disease, better support for use of medicines which should improve health outcome.
5. Reduce hospital and GP consultations.

A26. What are the potential risks for the researchers themselves? (if any)

None.

RECRUITMENT AND INFORMED CONSENT

In this section we ask you to describe the recruitment procedures for the study. Please give separate details for different study groups where appropriate.

A27-1. How will potential participants, records or samples be identified? Who will carry this out and what resources will be used? For example, identification may involve a disease register, computerised search of GP records, or review of medical records. Indicate whether this will be done by the direct healthcare team or by researchers acting under arrangements with the responsible care organisation(s).

- Patient’s recruitment will be carried out by three methods in each pharmacy and any of these methods will be used to recruit an average number of 20 patients per pharmacy. These methods include the following:
  1. Reviewing Medicine Use Review (MUR) reports: a retrospective review of MUR reports that have been conducted in the last 6 months will be carried out by community pharmacists to identify a list of patient’s name and address that match inclusion criteria. The patients who meet the inclusion criteria, will be invited by community pharmacist. MUR form is attached as appendix 4.
  2. Reviewing Patient Medication Records (PMRs): a retrospective review of patient medication records (PMRs) held in the pharmacy database for the last 6 months will be carried out by community pharmacists to identify a list of patient’s name and address that match inclusion criteria. The patients who meet the inclusion criteria, will be invited by community pharmacist.
  3. Direct approach through the community pharmacist: the patients who present at the community pharmacy to have a prescription dispensed and meet the inclusion criteria, will be directly approached and invited by community pharmacist in the pharmacy. The Chief investigator will also help community pharmacists in recruiting patients through direct approach. Once patient identified and informed of the study by pharmacy staff, potential participants will be referred to the chief investigator to invite them to take part. The chief investigator will discuss with patient only after having agreed to this with pharmacist. The chief investigator will be rotating through community pharmacies.
- All the identified patients will be invited to take part in the study by sending or giving in person an invitation letter and a prepared information pack explaining that the patient need to participate in a semi-structured interview.

A27-2. Will the identification of potential participants involve reviewing or screening the identifiable personal information of patients, service users or any other person?

☐ Yes  ☐ No

Please give details below:
- Patient’s recruitment will be carried out by three methods in each pharmacy and any of these methods will be used to recruit an average number of 20 patients per pharmacy. These methods include the following:
  1. Reviewing Medicine Use Review (MUR) reports: a retrospective review of MUR reports that have been conducted in the last 6 months will be carried out by community pharmacists to identify a list of patient’s name and address that match inclusion criteria. The patients who meet the inclusion criteria, will be invited by community pharmacist. MUR form is attached as appendix 4.
  2. Reviewing Patient Medication Records (PMRs): a retrospective review of patient medication records (PMRs) held in the pharmacy database for the last 6 months will be carried out by community pharmacists to identify a list of patient’s name and address that match inclusion criteria. The patients who meet the inclusion criteria, will be invited by community pharmacist.
  3. Direct approach through the community pharmacist: the patients who present at the community pharmacy to have a prescription dispensed and meet the inclusion criteria, will be directly approached and invited by community pharmacist in the pharmacy. The Chief investigator will also help community pharmacists in recruiting patients through direct approach. Once patient identified and informed of the study by pharmacy staff, potential participants will be
referred to the chief investigator to invite them to take part. The chief investigator will discuss with patient only after having agreed to this with pharmacist. The chief investigator will be rotating through community pharmacies.

- All the identified patients will be invited to take part in the study by sending or giving in person an invitation letter and a prepared information pack explaining that the patient need to participate in a semi-structured interview.

A27.3. Describe what measures will be taken to ensure there is no breach of any duty of confidentiality owed to patients, service users or any other person in the process of identifying potential participants. Indicate what steps have been or will be taken to inform patients and service users of the potential use of their records for this purpose. Describe the arrangements to ensure that the wishes of patients and service users regarding access to their records are respected. Please consult the guidance notes on this topic.

The community pharmacists will identify and invite eligible patients to take part in the study and if they agree, they will be referred to the chief investigator who will provide a full explanation of the study and take informed (written) consent prior to commencing the interview.

Patients recruitment will be carried out by two methods in each pharmacy and any of these methods will be used to recruit an average number of 20 patients per pharmacy. These methods are:

1. Reviewing Medicine Use Review (MUR) reports and Patient Medication Records (PMRs). The community pharmacists will do a retrospective review of MUR reports and PMRs over the last 6 months to identify eligible patients. The community pharmacists will approach and invite the patients by telephone and each patient will be provided with a prepared information pack which will include a patient information sheet, reply slip and pre-paid envelope.

2. Direct approach. The community pharmacists will approach eligible patients directly when they come to the pharmacy (e.g. for a prescription, OTC, consultation) and invite them to take part. Each patient will be provided with a prepared information pack which will include a patient information sheet, reply slip and pre-paid envelope.

A27.4. Will researchers or individuals other than the direct care team have access to identifiable personal information of any potential participants?

☐ Yes ☐ No

A28. Will any participants be recruited by publicity through posters, leaflets, adverts or websites?

☐ Yes ☐ No

A29. How and by whom will potential participants first be approached?

The potential participants will be first approached by community pharmacists.

1. Reviewing Medicine Use Review (MUR) reports: a retrospective review of MUR reports that have been conducted in the last 6 months will be carried out by community pharmacists to identify a list of patient’s name and address that match inclusion criteria. The patients who meet the inclusion criteria, will be invited by community pharmacist. MUR form is attached as appendix 4.

2. Reviewing Patient Medication Records (PMRs): a retrospective review of patient medication records (PMRs) held in the pharmacy database for the last 6 months will be carried out by community pharmacists to identify a list of patient’s name and address that match inclusion criteria. The patients who meet the inclusion criteria, will be invited by community pharmacist.

3. Direct approach through the community pharmacist: the patients who present at the community pharmacy to have a prescription dispensed and meet the inclusion criteria, will be directly approached and invited by community pharmacist.

Once patient identified and informed of the study by pharmacy staff, potential participants will be referred to the chief investigator to invite them to take part. The chief investigator will discuss with patient only after having agreed to this with pharmacist. The chief investigator will be rotating through community pharmacies.

A30. Will you obtain informed consent from or on behalf of research participants?

☐ Yes ☐ No
If you will be obtaining consent from adult participants, please give details of who will take consent and how it will be done, with details of any steps to provide information (a written information sheet, videos, or interactive materials). Arrangements for adults unable to consent for themselves should be described separately in Part B Section 5, and for children in Part B Section 6.

If you plan to seek informed consent from vulnerable groups, say how you will ensure that consent is voluntary and fully informed.

- All the identified patients will be invited to take part in the study by sending or giving in person an invitation letter and a prepared information pack explaining that the patient needs to participate in a semi-structured interview.
- The information pack will consist of a patient information sheet explaining the purpose of the study, study procedures and how it will be conducted, possible disadvantages and benefits from taking part, sponsorship and confidentiality of data and the chief investigator’s contact details. The information pack will also include a consent form, a pre-paid envelope with the chief investigator’s address and a photograph of the chief investigator so that the patients know who they will be expecting if they wish to take part in the study. Patient Invitation Letter, Patient Information Sheet and Patient Consent Form are attached as appendices 5, 6 and 7 respectively.
- The patients can also email or phone the chief investigator if they wish to take part instead of sending a reply slip.
- Adequate time duration (i.e. 72 hours) will be given to the patients to consider whether they wish to take part in the study which they can do by returning the reply slip or sending an email or phoning the research student.
- Patient, who expresses willingness to take part, will be contacted by the chief investigator and an agreed date, time and place will be arranged for the conduct of the semi-structured interview. An opportunity to ask questions will be provided.
- If the patient is unable to speak English, Arabic or Persian, access to a translator will be sought after seeking the patient’s permission.
- A written and signed consent form will be obtained by the chief investigator prior to commencing the semi-structured interview.
- A follow-up letter will be sent to non-responders to remind them to take part. This will be done after three weeks of sending initial invitation letter and prepared information pack.

If you are not obtaining consent, please explain why not.

Please enclose a copy of the information sheet(s) and consent form(s).

A30-2. Will you record informed consent (or advice from consultees) in writing?

- Yes  ○ No

A31. How long will you allow potential participants to decide whether or not to take part?

Up to 72 hours

A33-1. What arrangements have been made for persons who might not adequately understand verbal explanations or written information given in English, or who have special communication needs? (e.g. translation, use of interpreters)

If the patient is unable to speak English, Arabic or Persian access to a translator will be sought. Translator could be any of the following: a family member, friend, carer or pharmacist who can act as a translator after seeking the patient’s permission.

A35. What steps would you take if a participant, who has given informed consent, loses capacity to consent during the study? Tick one option only.

- The participant and all identifiable data or tissue collected would be withdrawn from the study. Data or tissue which is not identifiable to the research team may be retained.
- The participant would be withdrawn from the study. Identifiable data or tissue already collected with consent would be retained and used in the study. No further data or tissue would be collected or any other research procedures carried out on or in relation to the participant.
- The participant would continue to be included in the study.
- Not applicable – informed consent will not be sought from any participants in this research.
- Not applicable – it is not practicable for the research team to monitor capacity and continued capacity will be assumed.
Further details:

If you plan to retain and make further use of identifiable data/tissue following loss of capacity, you should inform participants about this when seeking their consent initially.

CONFIDENTIALITY

In this section, personal data means any data relating to a participant who could potentially be identified. It includes pseudonymised data capable of being linked to a participant through a unique code number.

### Storage and use of personal data during the study

<table>
<thead>
<tr>
<th>A36. Will you be undertaking any of the following activities at any stage (including in the identification of potential participants)? (Tick as appropriate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Access to medical records by those outside the direct healthcare team</td>
</tr>
<tr>
<td>☐ Electronic transfer by magnetic or optical media, email or computer networks</td>
</tr>
<tr>
<td>☐ Sharing of personal data with other organisations</td>
</tr>
<tr>
<td>☐ Export of personal data outside the EEA</td>
</tr>
<tr>
<td>✔ Use of personal addresses, postcodes, faxes, emails or telephone numbers</td>
</tr>
<tr>
<td>✔ Publication of direct quotations from respondents</td>
</tr>
<tr>
<td>☐ Publication of data that might allow identification of individuals</td>
</tr>
<tr>
<td>✔ Use of audio/visual recording devices</td>
</tr>
<tr>
<td>✔ Storage of personal data on any of the following:</td>
</tr>
<tr>
<td>☐ Manual files including X-rays</td>
</tr>
<tr>
<td>☐ NHS computers</td>
</tr>
<tr>
<td>☐ Home or other personal computers</td>
</tr>
<tr>
<td>✔ University computers</td>
</tr>
<tr>
<td>☐ Private company computers</td>
</tr>
<tr>
<td>☐ Laptop computers</td>
</tr>
</tbody>
</table>

Further details:

### A37. Please describe the physical security arrangements for storage of personal data during the study?

The data collected will be handled with confidentiality throughout the study period and kept in a coded format without the name of the patients and locked all the time in a designated cabinet for this purpose. Data will be stored in the School of Pharmacy computers where all files will be password protected and only the researcher will be allowed access. Storage will be responsibility of Professor Felicity Smith.

### A38. How will you ensure the confidentiality of personal data? Please provide a general statement of the policy and procedures for ensuring confidentiality, e.g., anonymization or pseudonymisation of data.

The data collected will be handled with confidentiality throughout the study period and kept in a coded format without the name of the patients and locked all the time in a designated cabinet for this purpose. Data will be stored in the School of Pharmacy computers where all files will be password protected and only the researcher will be allowed access. Storage will be responsibility of Professor Felicity Smith.

### A40. Who will have access to participants' personal data during the study? Where access is by individuals outside the direct care team, please justify and say whether consent will be sought.

22 84253267452/14/174

469
The chief investigator. This will enable access to patient's relevant health records. Consent will be sought to access patient records and personal information.

**Storage and use of data after the end of the study**

**A41. Where will the data generated by the study be analysed and by whom?**

The data will be generated and analysed by the chief investigator at the school of pharmacy, university of London.

**A42. Who will have control of and act as the custodian for the data generated by the study?**

<table>
<thead>
<tr>
<th>Title</th>
<th>Forename/Initials</th>
<th>Surname</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professor</td>
<td>Felicity</td>
<td>Smith</td>
</tr>
</tbody>
</table>

**Post**

Professor of Pharmacy Practice, Department of Practice and Policy, School of Pharmacy, University of London

**Qualifications**

Bachelor of Pharmacy (Hons.) 2:1, School of Pharmacy, University of London 1980

MRPharmS (Member of the Royal Pharmaceutical Society of Great Britain) 1981

MA (African Studies), School of Oriental and African Studies, University of London 1994

PhD St Bartholomew's Hospital Medical College, University of London 1989

**Work Address**

Department of Practice and Policy, School of Pharmacy, University of London

Entrance A, Mezzanine Floor, British Medical Association (BMA)

Tavistock Square, London

**Post Code**

WC1H 9UP

**Work Email**

felicity.smith@pharmacy.ac.uk

**Work Telephone**

02078741288

**Fax**

02073375693

**A43. How long will personal data be stored or accessed after the study has ended?**

- [ ] Less than 3 months
- [ ] 3 – 6 months
- [ ] 6 – 12 months
- [ ] 12 months – 3 years
- [x] Over 3 years

*If longer than 12 months, please justify.*

The School of Pharmacy University of London.

**A44. For how long will you store research data generated by the study?**

Years: 4

Months:

**A45. Please give details of the long term arrangements for storage of research data after the study has ended. Say where data will be stored, who will have access and the arrangements to ensure security.**

The data collected will be handled with confidentiality throughout the study period and kept in a coded format without the name of the patients and locked all the time in a designated cabinet for this purpose. Data will be stored in the School of Pharmacy computers where all files will be password protected and only the researcher will be allowed access. Storage will be responsibility of Professor Felicity Smith.
No identifiable data will be used.

**A53. Will you inform participants of the results?**

- Yes  [ ]
- No [ ]

*Please give details of how you will inform participants or justify if not doing so. Feedback of the results will be provided to the patients on request.*

**5. Scientific and Statistical Review**

**A54. How has the scientific quality of the research been assessed?**

- Independent external review
- Review within a company
- Review within a multi-centre research group
- Review within the Chief Investigator's institution or host organisation
- Review within the research team
- Review by educational supervisor
- Other [ ]

*Justify and describe the review process and outcome. If the review has been undertaken but not seen by the researcher, give details of the body which has undertaken the review.*

*For all studies except non-doctoral student research, please enclose a copy of any available scientific critique reports, together with any related correspondence.*

*For non-doctoral student research, please enclose a copy of the assessment from your educational supervisor/ institution.*

**A56. How have the statistical aspects of the research been reviewed?**

- Review by independent statistician commissioned by funder or sponsor
- Other review by independent statistician
- Review by company statistician
- Review by a statistician within the Chief Investigator’s institution
- Review by a statistician within the research team or multi-centre group
- Review by educational supervisor
- Other review by individual with relevant statistical expertise
- No review necessary as only frequencies and associations will be assessed – details of statistical input not required

*In all cases please give details below of the individual responsible for reviewing the statistical aspects. If advice has been provided in confidence, give details of the department and institution concerned.*

<table>
<thead>
<tr>
<th>Title</th>
<th>Forename/Initials</th>
<th>Surname</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr.</td>
<td>Robert</td>
<td>Kozanski</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Department</th>
<th>CLIGR, Health and Human Sciences Research Institute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institution</td>
<td>University of Hertfordshire</td>
</tr>
<tr>
<td>Work Address</td>
<td>College Lane Campus</td>
</tr>
</tbody>
</table>

| Post Code | AL10 9AB |

---

25 84253/267452/14/174
A57. What is the primary outcome measure for the study?
1) To identify different types of medicine-related problems (MRPs) as well as to categorise the types of MRPs experienced by Asians and Middle Eastern patients and the medicines involved.
2) To identify factors causing medicine-related problems associated with Asians and Middle Eastern groups of patients.
3) To assess the significance of MRPs experienced by Asian and Middle Eastern patients.
4) To explore different strategies on how to reduce the occurrence of future MRPs.

A58. What are the secondary outcome measures? (if any)

A59. What is the sample size for the research? How many participants/samples/data records do you plan to study in total? If there is more than one group, please give further details below.

Total UK sample size: 200
Total international sample size (including UK):
Total in European Economic Area:

Further details: Face-to-face semi-structured interview - up to 200 patients will be interviewed.

A60. How was the sample size decided upon? If a formal sample size calculation was used, indicate how this was done, giving sufficient information to justify and reproduce the calculation.

A formal sample size calculation was carried out to indicate the required number of participants. The frequency of MRPs in the community, reported in the literature, is between 2.5 - 65% (Gordon et al., 2005).

In Gordon et al. Study (2005), 70% of patients agreed to participate in the screening interviews in the pharmacies. Therefore, the formal sample size calculation for this study was carried out based on response rate of (70%) for the screening interviews (Gordon et al., 2005). The aim in this study will be to recruit an average number of 200 patients for semi-structured interview. This was done as follows:

The first 15 community pharmacies, that agree to take part in the study, will be recruited. Every pharmacy from 15 will be asked to recruit an average number of 20 patients using any of the three methods for patient's recruitment. This will result in recruiting 300 patients for the semi-structured interview. Based on 70% response rate, around 200 (n=210) patients will be interviewed.

The sample size of 200 patients will yield adequate power of 85% to allow clinically significant differences to be statistically significant and to make sample size representative. The power of the sample size was calculated using the following formula:

With a 95% confidence interval (z=1.96) and interval no wider than 0.05 (m). P is the power and n is the sample size.

A61. Will participants be allocated to groups at random?

☐ Yes  ☐ No

A62. Please describe the methods of analysis (statistical or other appropriate methods, e.g. for qualitative research) by which the data will be evaluated to meet the study objectives.

I. Quantitative Data Analysis
Quantitative data will be analysed using the Statistical Package for the Social Sciences (SPSS) version 13.0 for
window$ to report descriptive statistics. MRP$s identified from patients' perspective will be analysed as separate subsets. Quantitative data will be analysed to categorise types, causes of MRPs observed and the significance of the MRPs. Statistical methods including the Fisher's exact test, the Mann-Whitney test and the Chi-square test will be used to analyse categorical data where appropriate.

II. Qualitative Data Analysis
Information from the semi-structured interviews will provide the study with qualitative data. The interviews will be transcribed and coded according to themes. Thematic analysis which is a model of narrative analysis will be used (Braun and Clarke 2006) with the inductive theory approach for qualitative data analysis. Verbal audio taped interviews will be transcribed verbatim into written format by the researcher to allow the chief investigator to read and re-read the transcripts. Transcripts will be checked against the original tapes for accuracy by the project supervisor. Data will be coded using the NVivo (Non-numerical Unstructured Data Indexing, Searching and Theorising) computer software. Coding will enable the identification of areas of interest to the study. A data-originated thematic analysis will be employed. Sub-themes and overarching themes will then be developed from final codes. To enable a true presentation of the experiences being described, the themes developed will be reviewed and refined if required. Data extracts will be provided to support the themes developed as well as provide a true reflection of the information contained in the data set used in the analysis (Bryman 2004).

Ref:

6. MANAGEMENT OF THE RESEARCH

A63. Other key investigators/collaborators. Please include all grant co-applicants, protocol co-authors and other key members of the Chief Investigator's team, including non-doctoral student researchers.

Title Forename/Initials Surname

Post
Qualifications
Employer
Work Address

Post Code
Telephone
Fax
Mobile
Work Email

A64. Details of research sponsor(s)

A64-1. Sponsor

Lead Sponsor

Status:  
- NHS or HSC care organisation
- Academic
- Pharmaceutical industry
- Medical device industry
- Local Authority
- Other social care provider (including voluntary sector or private organisation)

Commercial status:
NHS R&D Form

### Contact person

<table>
<thead>
<tr>
<th>Field</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of organisation</td>
<td>School of Pharmacy, University of London</td>
</tr>
<tr>
<td>Given name</td>
<td>Maureen</td>
</tr>
<tr>
<td>Family name</td>
<td>Boylan</td>
</tr>
<tr>
<td>Address</td>
<td>28-38 Brunswick Square</td>
</tr>
<tr>
<td>Town/City</td>
<td>London</td>
</tr>
<tr>
<td>Post code</td>
<td>WC1N 1AX</td>
</tr>
<tr>
<td>Country</td>
<td>UNITED KINGDOM</td>
</tr>
<tr>
<td>Telephone</td>
<td>02077535817</td>
</tr>
<tr>
<td>Fax</td>
<td>02078373465</td>
</tr>
<tr>
<td>E-mail</td>
<td><a href="mailto:maureen.boylan@pharmacy.ac.uk">maureen.boylan@pharmacy.ac.uk</a></td>
</tr>
</tbody>
</table>

**Is the sponsor based outside the UK?**

- [ ] Yes
- [x] No

*Under the Research Governance Framework for Health and Social Care, a sponsor outside the UK must appoint a legal representative established in the UK. Please consult the guidance notes.*

<table>
<thead>
<tr>
<th>Question</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>A05.</td>
<td>Has external funding for the research been secured?</td>
</tr>
<tr>
<td></td>
<td>- [ ] Funding secured from one or more funders</td>
</tr>
<tr>
<td></td>
<td>- [ ] External funding application to one or more funders in progress</td>
</tr>
<tr>
<td></td>
<td>- [x] No application for external funding will be made</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>A06.</td>
<td>Has responsibility for any specific research activities or procedures been delegated to a subcontractor (other than a co-sponsor listed in A64-1)? Please give details of subcontractors if applicable.</td>
</tr>
<tr>
<td></td>
<td>- [ ] Yes</td>
</tr>
<tr>
<td></td>
<td>- [x] No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>A07.</td>
<td>Has this or a similar application been previously rejected by a Research Ethics Committee in the UK or another country?</td>
</tr>
<tr>
<td></td>
<td>- [ ] Yes</td>
</tr>
<tr>
<td></td>
<td>- [x] No</td>
</tr>
</tbody>
</table>

*Please provide a copy of the unfavourable opinion letter(s). You should explain in your answer to question A6-2 how the reasons for the unfavourable opinion have been addressed in this application.*

<table>
<thead>
<tr>
<th>Question</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>A08.</td>
<td>Give details of the lead NHS R&amp;D contact for this research:</td>
</tr>
<tr>
<td></td>
<td>- Title Firstname/Initials Surname</td>
</tr>
<tr>
<td></td>
<td>- Organisation</td>
</tr>
<tr>
<td></td>
<td>- Address</td>
</tr>
</tbody>
</table>

28 84253267452/14/174
### A68.1. How long do you expect the study to last in the UK?

- Planned start date: 31/01/2011
- Planned end date: 31/01/2014
- Total duration:
  - Years: 3
  - Months: 0
  - Days: 0

### A71.1. Is this study?

- Single centre
- Multicentre

### A71.2. Where will the research take place? *(Tick as appropriate)*

- England
- Scotland
- Wales
- Northern Ireland
- Other countries in European Economic Area

Total UK sites in study

- Does this trial involve countries outside the EU?
  - Yes
  - No

### A72. What host organisations (NHS or other) in the UK will be responsible for the research sites? *Please indicate the type of organisation by ticking the box and give approximate numbers of planned research sites:*

- NHS organisations in England
- NHS organisations in Wales
- NHS organisations in Scotland
- HSC organisations in Northern Ireland
- GP practices in England
- GP practices in Wales
- GP practices in Scotland
- GP practices in Northern Ireland
- Social care organisations
- Phase 1 trial units
- Prison establishments
- Probation areas
- Independent hospitals
A73-1. Will potential participants be identified through any organisations other than the research sites listed above?  
☐ Yes  ☑ No

A74. What arrangements are in place for monitoring and auditing the conduct of the research?  
Regular and frequent meeting with my supervisors who are experienced in handling patients confidentiality data.

A76. Insurance/indemnity to meet potential legal liabilities

Note: In this question to NHS indemnity schemes include equivalent schemes provided by Health and Social Care (HSC) in Northern Ireland

A76-1. What arrangements will be made for insurance and/or indemnity to meet the potential legal liability of the sponsor(s) for harm to participants arising from the management of the research? Please tick box(es) as applicable.

Note: Where a NHS organisation has agreed to act as sponsor or co-sponsor, indemnity is provided through NHS schemes. Indicate if this applies (there is no need to provide documentary evidence). For all other sponsors, please describe the arrangements and provide evidence.

☐ NHS indemnity scheme will apply (NHS sponsors only)  
☑ Other insurance or indemnity arrangements will apply (give details below)

The School of Pharmacy have an insurance policy (incorporating public liability) with Zurich Municipal until 31 July 2011. Insurance policy number NHE-01CA21-0013

Please enclose a copy of relevant documents.

A76-2. What arrangements will be made for insurance and/or indemnity to meet the potential legal liability of the sponsor(s) or employer(s) for harm to participants arising from the design of the research? Please tick box(es) as applicable.

Note: Where researchers with substantive NHS employment contracts have designed the research, indeminiity is provided through NHS schemes. Indicate if this applies (there is no need to provide documentary evidence). For all other protocol authors (e.g. company employees, university members), please describe the arrangements and provide evidence.

☐ NHS indemnity scheme will apply (protocol authors with NHS contracts only)  
☑ Other insurance or indemnity arrangements will apply (give details below)

The School of Pharmacy have an insurance policy (incorporating public liability) with Zurich Municipal until 31 July 2011. Insurance policy number NHE-01CA21-0013

Please enclose a copy of relevant documents.

A76-3. What arrangements will be made for insurance and/or indemnity to meet the potential legal liability of investigators/colaborators arising from harm to participants in the conduct of the research?  

Note: Where the participants are NHS patients, indemnity is provided through the NHS schemes or through professional
<table>
<thead>
<tr>
<th>Indemnity, indicate if this applies to the whole study (there is no need to provide documentary evidence). Where non-NHS sites are to be included in the research, including private practices, please describe the arrangements which will be made at these sites and provide evidence.</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ NHS indemnity scheme or professional indemnity will apply (participants recruited at NHS sites only)</td>
</tr>
<tr>
<td>☑ Research includes non-NHS sites (give details of insurance/indemnity arrangements for these sites below)</td>
</tr>
</tbody>
</table>

The School of Pharmacy have an insurance policy (incorporating public liability) with Zurich Municipal until 31 July 2011. Insurance policy number NHE-01CA21-0013

Please enclose a copy of relevant documents.

<table>
<thead>
<tr>
<th>A78. Could the research lead to the development of a new product/process or the generation of intellectual property?</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Yes ☑ No ☐ Not sure</td>
</tr>
</tbody>
</table>

---
## PART C: Overview of research sites

Please enter details of the host organisations (Local Authority, NHS or other) in the UK that will be responsible for the research sites. For NHS sites, the host organisation is the Trust or Health Board. Where the research site is a primary care site, e.g. GP practice, please insert the host organisation (PCT or Health Board) in the Institution row and insert the research site (e.g. GP practice) in the Department row.

<table>
<thead>
<tr>
<th>Research site</th>
<th>Investigator/ Collaborator/ Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Institution name</strong></td>
<td>Islington PCT</td>
</tr>
<tr>
<td><strong>Department name</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Street address</strong></td>
<td>338-346 Goswell Road</td>
</tr>
<tr>
<td><strong>Town/city</strong></td>
<td>London/Greater London</td>
</tr>
<tr>
<td><strong>Post Code</strong></td>
<td>EC1V 7LQ</td>
</tr>
<tr>
<td><strong>Title</strong></td>
<td></td>
</tr>
<tr>
<td><strong>First name/ Initials</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Surname</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Tel:</strong></td>
<td>020 7527 1000</td>
</tr>
<tr>
<td><strong>Fax:</strong></td>
<td>020 3316 1001</td>
</tr>
</tbody>
</table>

| **Institution name** | Brent Teaching PCT |
| **Department name** | Wembley Centre For Health and Care |
| **Street address** | 116 Chaplin Road |
| **Town/city** | Wembley/Middlesex |
| **Post Code** | HA0 4UZ |
| **Title** | |
| **First name/ Initials** | |
| **Surname** | |
| **Tel:** | 020 8795 6000 |
| **Fax:** | 020 8795 6774 |

| **Institution name** | Harrow PCT |
| **Department name** | Fourth Floor |
| **Street address** | 59-65 Lowlands Road |
| **Town/city** | Harrow/Middlesex |
| **Post Code** | HA1 3AW |
| **Title** | |
| **First name/ Initials** | |
| **Surname** | |
| **Tel:** | 020 8422 6644 |
| **Fax:** | 020 8426 8646 |

| **Institution name** | Bedfordshire PCT |
| **Department name** | Gilbert Hitchcock House |
| **Street address** | 21 Kimbolton Road |
| **Town/city** | Bedford/Bedfordshire |
| **Post Code** | MK40 2AW |
| **Title** | |
| **First name/ Initials** | |
| **Surname** | |
| **Tel:** | 01234 897200 |
| **Fax:** | 01234 342028 |

| **Institution name** | Luton PCT |
| **Department name** | The Ashram |
| **Street address** | Park Street West |
| **Town/city** | Luton/Bedfordshire |
| **Post Code** | LU1 3BE |
| **Title** | |
| **First name/ Initials** | |
| **Surname** | |
| **Tel:** | 01582 526840 |
| **Fax:** | 01582 526841 |
D1. Declaration by Chief Investigator

1. The information in this form is accurate to the best of my knowledge and belief and I take full responsibility for it.

2. I undertake to abide by the ethical principles underlying the Declaration of Helsinki and good practice guidelines on the proper conduct of research.

3. If the research is approved I undertake to adhere to the study protocol, the terms of the full application as approved and any conditions set out by review bodies in giving approval.

4. I undertake to notify review bodies of substantial amendments to the protocol or the terms of the approved application, and to seek a favourable opinion from the main REC before implementing the amendment.

5. I undertake to submit annual progress reports setting out the progress of the research, as required by review bodies.

6. I am aware of my responsibility to be up to date and comply with the requirements of the law and relevant guidelines relating to security and confidentiality of patient or other personal data, including the need to register when necessary with the appropriate Data Protection Officer. I understand that I am not permitted to disclose identifiable data to third parties unless the disclosure has the consent of the data subject or, in the case of patient data in England and Wales, the disclosure is covered by the terms of an approval under Section 251 of the NHS Act 2000.

7. I understand that research records/data may be subject to inspection by review bodies for audit purposes if required.

8. I understand that any personal data in this application will be held by review bodies and their operational managers and that this will be managed according to the principles established in the Data Protection Act 1998.

9. I understand that the information contained in this application, any supporting documentation and all correspondence with review bodies or their operational managers relating to the application:
   - Will be held by the main REC or the GTAC (as applicable) until at least 3 years after the end of the study, and by NHS R&D offices (where the research requires NHS management permission) in accordance with the NHS Code of Practice on Records Management.
   - May be disclosed to the operational managers of review bodies, or the appointing authority for the main REC, in order to check that the application has been processed correctly or to investigate any complaint.
   - May be seen by auditors appointed to undertake accreditation of REG.
   - Will be subject to the provisions of the Freedom of Information Acts and may be disclosed in response to requests made under the Acts except where statutory exemptions apply.

10. I understand that information relating to this research, including the contact details on this application, may be held on national research information systems, and that this will be managed according to the principles established in the Data Protection Act 1998.

11. I understand that the summary of this study will be published on the website of the National Research Ethics Service (NRES), together with the contact point for enquiries named below. Publication will take place no earlier than 3 months after issue of the ethics committee’s final opinion or the withdrawal of the application.

Contact point for publication (Not applicable for R&D Forms)
NRES would like to include a contact point with the published summary of the study for those wishing to seek further information. We would be grateful if you would indicate one of the contact points below.

- [x] Chief Investigator
- [ ] Sponsor
- [ ] Study co-ordinator
<table>
<thead>
<tr>
<th>Student</th>
<th>Other – please give details</th>
<th>None</th>
</tr>
</thead>
</table>

**Access to application for training purposes** *(Not applicable for R&D Forms)*

Optional – please tick as appropriate:

☑ I would be content for members of other RECs to have access to the information in the application in confidence for training purposes. All personal identifiers and references to sponsors, funders and research units would be removed.

**Signature:**

...........................................

**Print Name:** Faten Alhomoud

**Date:** 30/07/2011  *(dd/mm/yyyy)*
D2. Declaration by the sponsor’s representative

If there is more than one sponsor, this declaration should be signed on behalf of the co-sponsors by a representative of the lead sponsor named at A64-f.

I confirm that:

1. This research proposal has been discussed with the Chief Investigator and agreement in principle to sponsor the research is in place.

2. An appropriate process of scientific critique has demonstrated that this research proposal is worthwhile and of high scientific quality.

3. Any necessary indemnity or insurance arrangements, as described in question A76, will be in place before this research starts. Insurance or indemnity policies will be renewed for the duration of the study where necessary.

4. Arrangements will be in place before the study starts for the research team to access resources and support to deliver the research as proposed.

5. Arrangements to allocate responsibilities for the management, monitoring and reporting of the research will be in place before the research starts.

6. The duties of sponsors set out in the Research Governance Framework for Health and Social Care will be undertaken in relation to this research.

7. Where the research is reviewed by a REC within the UK Health Departments Research Ethics Service, I understand that the summary of this study will be published on the website of the National Research Ethics Service (NRES), together with the contact point for enquiries named in this application. Publication will take place no earlier than 3 months after issue of the ethics committee’s final opinion or the withdrawal of the application.

Signature: 

Print Name: Ms M F Boylan

Post: Chief Operating Officer and Secretary to Council

Organisation: The School of Pharmacy, University of London

Date: 30/07/2011 (dd/mm/yyyy)
D3. Declaration for student projects by academic supervisor(s)

1. I have read and approved both the research proposal and this application. I am satisfied that the scientific content of the research is satisfactory for an educational qualification at this level.

2. I undertake to fulfil the responsibilities of the supervisor for this study as set out in the Research Governance Framework for Health and Social Care.

3. I take responsibility for ensuring that this study is conducted in accordance with the ethical principles underlying the Declaration of Helsinki and good practice guidelines on the proper conduct of research, in conjunction with clinical supervisors as appropriate.

4. I take responsibility for ensuring that the applicant is up to date and complies with the requirements of the law and relevant guidelines relating to security and confidentiality of patient and other personal data, in conjunction with clinical supervisors as appropriate.

<table>
<thead>
<tr>
<th>Academic supervisor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature:</td>
</tr>
<tr>
<td>Print Name:</td>
</tr>
<tr>
<td>Post:</td>
</tr>
<tr>
<td>Organisation:</td>
</tr>
<tr>
<td>Date:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Academic supervisor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature:</td>
</tr>
<tr>
<td>Print Name:</td>
</tr>
<tr>
<td>Post:</td>
</tr>
<tr>
<td>Organisation:</td>
</tr>
<tr>
<td>Date:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Academic supervisor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature:</td>
</tr>
<tr>
<td>Print Name:</td>
</tr>
<tr>
<td>Post:</td>
</tr>
<tr>
<td>Organisation:</td>
</tr>
<tr>
<td>Date:</td>
</tr>
</tbody>
</table>
Appendix 20: NHS Site Specific Information (SSI) Form.

NHS SSI        IRAS Version 3.1

Welcome to the Integrated Research Application System

IRAS Project Filter

The integrated dataset required for your project will be created from the answers you give to the following questions. The system will generate only those questions and sections which (a) apply to your study type and (b) are required by the bodies reviewing your study. Please ensure you answer all the questions before proceeding with your applications.

Please enter a short title for this project (maximum 70 characters)

Medicine Related Problems experienced by Ethnic Minority Populations

1. Is your project research?
   - [ ] Yes  [ ] No

2. Select one category from the list below:
   - [ ] Clinical trial of an investigational medicinal product
   - [ ] Clinical investigation or other study of a medical device
   - [ ] Combined trial of an investigational medicinal product and an investigational medical device
   - [ ] Other clinical trial or clinical investigation
   - [ ] Study administering questionnaires/interviews for quantitative analysis, or using mixed quantitative/qualitative methodology
   - [ ] Study involving qualitative methods only
   - [ ] Study limited to working with human tissue samples, other human biological samples and/or data (specific project only)
   - [ ] Research tissue bank
   - [ ] Research database

   If your work does not fit any of these categories, select the option below:
   - [ ] Other study

2a. Please answer the following question(s):
   a) Does the study involve the use of any ionising radiation?  [ ] Yes  [ ] No
   b) Will you be taking new human tissue samples (or other human biological samples)?  [ ] Yes  [ ] No
   c) Will you be using existing human tissue samples (or other human biological samples)?  [ ] Yes  [ ] No

3. In which countries of the UK will the research sites be located? (Tick all that apply)
   - [x] England
   - [ ] Scotland
   - [ ] Wales
   - [ ] Northern Ireland

3a. In which country of the UK will the lead NHS R&D office be located:
   - [x] England
   - [ ] Scotland
484

4. Which review bodies are you applying to?
- [✓] NHS/HSC Research and Development offices
- [✓] Research Ethics Committee
- [ ] Social Care Research Ethics Committee
- [ ] National Information Governance Board for Health and Social Care (NIGB)
- [ ] National Offender Management Service (NOMS) (Prisons & Probation)

5. Will any research sites in this study be NHS organisations?
- [ ] Yes
- [ ] No

5a. Do you want your NHS R&D application(s) to be processed through the NIHR Coordinated System for gaining NHS Permission?
- [ ] Yes
- [ ] No

If yes, you must complete and submit the NIHR CSP Application Form immediately after completing this project litter, before proceeding with completing and submitting other applications.

6. Do you plan to include any participants who are children?
- [ ] Yes
- [ ] No

7. Do you plan at any stage of the project to undertake intrusive research involving adults lacking capacity to consent for themselves?
- [ ] Yes
- [ ] No

Answer: Yes if you plan to recruit participants aged 16 or over who lack capacity, or to retain them in the study following loss of capacity. Intrusive research means any research requiring consent in law. This includes use of identifiable tissue samples or personal information, except where application is being made to the NIGB Ethics and Confidentiality Committee to set aside the common law duty of confidentiality in England and Wales. Please consult the guidance notes for further information on the legal frameworks for research involving adults lacking capacity in the UK.

8. Do you plan to include any participants who are prisoners or young offenders in the custody of HM Prison Service or who are offenders supervised by the probation service in England or Wales?
- [ ] Yes
- [ ] No

9. Is the study, or any part of the study, being undertaken as an educational project?
- [ ] Yes
- [ ] No

9a. Is the project being undertaken in part fulfilment of a PhD or other doctorate?
- [ ] Yes
- [ ] No

10. Will this research be financially supported by the United States Department of Health and Human Services or any of...
its divisions, agencies or programs?

☐ Yes  ☐ No

11. Will identifiable patient data be accessed outside the clinical care team without prior consent at any stage of the project (including identification of potential participants)?

☐ Yes  ☐ No
### Site-Specific Information Form (NHS sites)

**Is the site hosting this research a NHS site or a non-NHS site?** NHS sites include Health and Social Care organisations in Northern Ireland. The sites hosting the research are the sites in which or through which research procedures are conducted. For NHS sites, this includes sites where NHS staff are participants.

- [ ] NHS site
- [ ] Non-NHS site

*This question must be completed before proceeding. The filter will customise the form, disabling questions which are not relevant to this application.*

*One Site-Specific Information Form should be completed for each research site and submitted to the relevant R&D office with the documents in the checklist. See guidance notes.*

### The data in this box is populated from Part A:

**Title of research:** Medicine Use and Medicine Related Problems experienced by Ethnic Minority Patients with Chronic Diseases in Primary Care

**Short title:** Medicine Related Problems experienced by Ethnic Minority Populations

**Chief Investigator:**

<table>
<thead>
<tr>
<th>Title</th>
<th>Forename/Initials</th>
<th>Surname</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miss</td>
<td>Faten</td>
<td>Alhomoud</td>
</tr>
</tbody>
</table>

**Name of NHS Research Ethics Committee to which application for ethical review is being made:**

- London - City and East

**Project reference number from above REC:** 11/LO/1391

### 1.1. Give the name of the NHS organisation responsible for this research site

- Community pharmacies in Luton

### 1.2. In which country is the research site located?

- [x] England
- [ ] Wales
- [ ] Scotland
- [ ] Northern Ireland

### 1.3. Is the research site a GP practice or other Primary Care Organisation?

- [x] Yes
- [ ] No

If Yes, please give the name of the research site:

- Community pharmacies in Luton
2. Who is the Principal Investigator or Local Collaborator for this research at this site?

Select the appropriate title:  
- [ ] Principal Investigator  
- [ ] Local Collaborator

Title  
Forename/Initials: Fatemah  
Surname: Alhomoud

Post:  
PhD Researcher

Qualifications:  
MSc in Clinical Pharmacy and BSc in Pharmacy

Organisation:  
School of Pharmacy, University of London  
Department of Practice and Policy, School of Pharmacy, University of London  
Entrance A, Mezzanine Floor,  
British Medical Association (BMA), Tavistock Square, London

Work Address:  
WC1H 9JP

E-mail:  
fatemah.alhomoud@live.pharmacy.ac.uk

Work Telephone:  
07965367688

Fax:  

a) Approximately how much time will this person allocate to conducting this research? Please provide your response in terms of Whole Time Equivalents (WTE).  
One WTE

b) Does this person hold a current substantive employment contract, Honorary Clinical Contract or Honorary Research Contract with the NHS organisation or accepted by the NHS organisation?  
[ ] Yes  
[ ] No

c) Is this person contracted to provide NHS services to the NHS organisation?  
[ ] Yes  
[ ] No

d) Does this person have a substantive or honorary contract with someone contracted to provide NHS services to the NHS organisation?  
[ ] Yes  
[ ] No

A copy of a current CV for the Principal Investigator (maximum 2 pages of A4) must be submitted with this form.

3. Please give details of all locations, departments, groups or units at which or through which research procedures will be conducted at this site and describe the activity that will take place.

Please list all locations/departments etc where research procedures will be conducted within the NHS organisation, describing the involvement in a few words. Where access to specific facilities will be required these should also be listed for each location.

Name the main location/department first. Give details of any research procedures to be carried out off site, for example in participants' homes.

<table>
<thead>
<tr>
<th>Location</th>
<th>Activity/facilities</th>
</tr>
</thead>
</table>
| 1 Community pharmacies in Luton | The community pharmacist will be involved in providing access and help to recruit patients. Patient recruitment (approximately 20 patients per pharmacy) will be carried out using 2 approaches: (1) reviewing recent Medicine Use Review reports and Patient Medication Records in the pharmacy and (3) asking and inviting patients who present at the pharmacy (e.g. for a prescription, OTC or consultation).  
Note: the community pharmacists will invite eligible patients to take part in the study and if they agree, they will be referred to the chief investigator who will provide a full explanation of the study and take informed (written) consent prior to commencing the interview. |

84253/267489/6/796/136585/226655
5. Please give details of all other members of the research team at this site.

1

<table>
<thead>
<tr>
<th>Title</th>
<th>Forename/Initials</th>
<th>Surname</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Work E-mail</th>
<th>Employing organisation</th>
<th>Post</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Qualifications</th>
<th>Role in research team</th>
<th>researcher</th>
</tr>
</thead>
</table>

a) Approximately how much time (approximately) will this person allocate to conducting this research? Please provide your response in terms of Whole Time Equivalents (WTE).

b) Does this person hold a current substantive employment contract, Honorary Clinical Contract or Honorary Research Contract with the NHS organisation or accepted by the NHS organisation?  Yes  No

A copy of a current CV for the research team member (maximum 2 pages of A4) must be submitted to the R&D office.

6. Does the Principal Investigator or any other member of the site research team have any direct personal involvement (e.g. financial, share-holding, personal relationship etc) in the organisation sponsoring or funding the research that may give rise to a possible conflict of interest?

Yes  No

7. What is the proposed local start and end date for the research at this site?

Start date: 01/01/2012

End date: 01/01/2014

Duration (Months): 24

8. Give details of all non-clinical intervention(s) or procedure(s) that will be received by participants as part of the research protocol. (These include seeking consent, interviews, non-clinical observations and use of questionnaires.)

Columns 1-4 have been completed with information from A19 as below:

1. Total number of interventions/procedures to be received by each participant as part of the research protocol.
2. If this intervention would have been routinely given to participants as part of their care, how many of the total would have been routine?
3. Average time taken per intervention (minutes, hours or days)
4. Details of who will conduct the procedure, and where it will take place

Please complete Column 5 with details of the names of individuals or names of staff groups who will conduct the procedure at this site.

<table>
<thead>
<tr>
<th>Intervention or procedure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other</td>
<td>1</td>
<td>N/A</td>
<td>Community pharmacists will conduct a retrospective review of both MUR reports that has been conducted in the last 6 months and Patients Medication Records</td>
<td>The community pharmacists will invite eligible patients to take</td>
<td></td>
</tr>
</tbody>
</table>
(PMRs) held in the pharmacy for the last six months to recruit patients who meet the inclusion criteria. Additionally, all patients who will present at the community pharmacy to have a prescription dispensed and meet the inclusion criteria will be approached directly by pharmacist or chief investigator to invite them to take part. The chief investigator will discuss with patient only after having agreed to this with pharmacist. All the identified patients will be invited to take part in the study by sending or giving in person an invitation letter and a prepared information pack explaining that the patients need to participate in a face-to-face semi-structured interview.

| Other Questionnaire (Semi-structured interview) | 1 | About 45 minutes | The chief investigator will administer a two validated tools which include screening tool for identification of MRPs (Gordon et al., 2005) and Morisky 8-items tool (Morisky et al., 2003) as well as an agreed interview schedule. |
| Other | 1 | N/A | The chief investigator will conduct a retrospective review of both MUR reports and Patients Medication Records (PMRs) held in the pharmacy for the identification of medicine-related problems. |
| Other | 1 | N/A | Individual case summary will be prepared by the chief investigator using information from pharmacy records (MUR reports and PMRs) and semi-structured interview, to enable expert panel review individual cases with a MRP effectively, categorise MRPs observed using Gordon et al. (2005) classification and assess significance of each MRP identified. |

8.2 Will any aspects of the research at this site be conducted in a different way to that described in Part A or the protocol?

☐ Yes  ☐ No

If Yes, please note any relevant changes to the information in the above table.

Are there any changes other than those noted in the table?

10. How many research participants/samples is it expected will be recruited/obtained from this site?

Approximately 20 patients per pharmacy.

Note: the number of pharmacies per PCT will be between 3 to 5.

11. Give details of how potential participants will be identified locally and who will be making the first approach to them to take part in the study.

The community pharmacists will identify and invite eligible patients to take part in the study and if they agree, they will be referred to the chief investigator who will provide a full explanation of the study and take informed (written) consent prior to commencing the interview.
12. Who will be responsible for obtaining informed consent at this site? What expertise and training do these persons have in obtaining consent for research purposes?

<table>
<thead>
<tr>
<th>Name</th>
<th>Expertise/training</th>
</tr>
</thead>
<tbody>
<tr>
<td>The chief investigator (Miss Faten Ahmoud)</td>
<td>She will take an online training course in obtaining informed consent before commencing the interview.</td>
</tr>
</tbody>
</table>

15-1. Is there an independent contact point where potential participants can seek general advice about taking part in research?

NO

15-2. Is there a contact point where potential participants can seek further details about this specific research project?

NO

16. Are there any changes that should be made to the generic content of the information sheet to reflect site-specific issues in the conduct of the study? A substantial amendment may need to be discussed with the Chief Investigator and submitted to the main REC.

NO

Please provide a copy on headed paper of the participant information sheet and consent form that will be used locally. Unless indicated above, this must be the same generic version submitted for/approved by the main REC for the study while including relevant local information about the site, investigator and contact points for participants (see guidance notes).

17. What local arrangements have been made for participants who might not adequately understand verbal explanations or written information given in English, or who have special communication needs? (e.g. translation, use of interpreters etc.)

Patients who cannot speak English or Arabic, will also be included in the study through utilising routine practice used by community pharmacists who provide services for Asian and Middle Eastern patients who do not speak English. This may involve a community pharmacist or other pharmacy staff who assist in communicating with the patient during the interview. Where translation or interpretation is required, the interviews will be validated by the research team which include speakers of Arabic, Farsi, Panjabi, Hindi and Urdu.

18. What local arrangements will be made to inform the GP or other healthcare professionals responsible for the care of the participants?

N/A

19. What arrangements (e.g. facilities, staffing, psychosocial support, emergency procedures) will be in place at the site, where appropriate, to minimise the risks to participants and staff and deal with the consequences of any harm?

The study will be carried out in community pharmacies hence the arrangements are those normally in place and meet governance arrangements for the community pharmacies.

20. What are the arrangements for the supervision of the conduct of the research at this site? Please give the name and contact details of any supervisor not already listed in the application.

The academic supervisors will be regularly informed of the progress of the study.
1. Dr. Zoe Aslanpour
   School of Pharmacy, University of Hertfordshire
   College Lane Campus
   Hatfield, Herts
   AL10 9AB
   z.aslanpour@herts.ac.uk
   01707284663
21. What external funding will be provided for the research at this site?

- Funded by commercial sponsor
- Other funding
- No external funding

How will the costs of the research be covered?
Privately funded PhD

23. Authorisations required prior to R&D approval

This section deals with authorisations by managers within the NHS organisation. It should be signed in accordance with the guidance provided by the NHS organisation. This may include authorisation by clinical supervisors, line managers, service managers, support department managers, pharmacy, data protection officers or finance managers, depending on the nature of the research. Managers completing this section should confirm in the text what the authorisation means, in accordance with the guidance provided by the NHS organisation.

This section may also be used by university employers or research support staff to provide authorisation to NHS organisations, in accordance with guidance from the university.

Declaration by Principal Investigator or Local Collaborator

1. The information in this form is accurate to the best of my knowledge and I take full responsibility for it.

2. I undertake to abide by the ethical principles underpinning the World Medical Association’s Declaration of Helsinki and relevant good practice guidelines in the conduct of research.

3. If the research is approved by the main REC and NHS organisation, I undertake to adhere to the study protocol, the terms of the application of which the main REC has given a favourable opinion and the conditions requested by the NHS organisation, and to inform the NHS organisation within local timelines of any subsequent amendments to the protocol.

4. If the research is approved, I undertake to abide by the principles of the Research Governance Framework for Health and Social Care.

5. I am aware of my responsibility to be up to date and comply with the requirements of the law and relevant guidelines relating to the conduct of research.

6. I undertake to disclose any conflicts of interest that may arise during the course of this research, and take responsibility for ensuring that all staff involved in the research are aware of their responsibilities to disclose conflicts of interest.
Appendix 21: R&D approvals from North West London and North Central London R&D offices.

Dear Ms Fatem,

Title: Medicine related problems experienced by ethnic minority populations
LREC Ref: 11/L0/130/1
R&D Reference Number: 11/PC59

I am pleased to confirm that the above study has now received R&D approval, and you may now start your research in the following trusts:
NHS Barnet
NHS Camden
NHS Enfield
NHS Islington

May I take this opportunity to remind you that during the course of your research you will be expected to ensure the following:
- **Patient contact:** only trained or supervised researchers who hold the appropriate Trust/NHS contract (honorary or full) with each Trust are allowed contact with that Trust’s patients. If any researcher on the study does not hold a contract please contact the R&D office as soon as possible.
- **Informed consent:** original signed consent forms must be kept on file. A copy of the consent form must also be placed in the patient’s notes. Research projects are subject to random audit by a member of the R&D office who will ask to see all original signed consent forms.
- **Data protection:** measures must be taken to ensure that patient data is kept confidential in accordance with the Data Protection Act 1998.
- **Health & safety:** all local health & safety regulations where the research is being conducted must be adhered to.
- **Adverse events:** adverse events or suspected misconduct should be reported to the R&D office and the Ethics Committee.
- **Project update:** you will be sent a project update form at regular intervals. Please complete the form and return it to the R&D office.
- **Publications:** it is essential that you inform the R&D office about any publications which result from your research.
- **Ethics:** R&D approval is based on the conditions set out in the favourable opinion letter from the Ethics Committee. If during the lifetime of your research project, you wish to make a revision or amendment to your original submission, please contact both the Ethics Committee and R&D Office as soon as possible.

Please ensure that all members of the research team are aware of their responsibilities as researchers. For more details on these responsibilities, please check the R&D handbook or NoCOrR website:
http://www.nocorr.nhs.uk

We would like to wish you every success with your project.

Yours sincerely,

Mabel Sall
Senior Research Governance Officer
11th January 2012

Project: Medicine Use and Medicine Related Problems experienced by Ethnic
Title: Minority Patients with Chronic Diseases in Primary Care
REC: 11/LO/1391
Portfolio No: N/A
CSP No: N/A

Thank you for your assistance providing the documentation for the scrutiny of the proposal.

I am satisfied that your proposal meets with the requirements of the Research Governance Framework (RGF). The West London Consortium for Research and Innovation is happy to approve your study on behalf of NHS Brent, Harrow and Westminster on the understanding that you adhere to the RGF conditions on the attached document. The end date of the project is listed as January 2014.

The documents received and approved were:

<table>
<thead>
<tr>
<th>R&amp;D form</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SSIF for Brent, Harrow and Westminster</td>
<td></td>
</tr>
<tr>
<td>NRES Committee London – City &amp; East favourable ethical opinion letter</td>
<td>17/10/11</td>
</tr>
<tr>
<td>All study documents as per REC letter listed above</td>
<td></td>
</tr>
</tbody>
</table>

From the information provided and the requirement of the Research Governance Framework have been satisfied in the following areas:

<table>
<thead>
<tr>
<th>Check list</th>
</tr>
</thead>
<tbody>
<tr>
<td>The study has received peer review - Private funded PhD. Reviewed by educational supervisor</td>
</tr>
<tr>
<td>The study has been approved by the local service manager – N/A – a condition of approved is that details of each pharmacy should be provided</td>
</tr>
<tr>
<td>Use of PCT resources – semi-structured interviews to be conducted at Pharmacy practices. Pharmacies will be invited to take part in the study by an invitation letter. All the identified patients will be invited to take part in the study by sending or giving in person an invitation letter and a prepared information pack explaining that the patient need to participate in a semi-structured interview.</td>
</tr>
</tbody>
</table>

Chair: Marcia Saunders

Chief Executive: Rob Larkman
Data Protection – R&D Form states that the data collected will be handled with confidentiality throughout the study period and kept in a coded format without the name of the patients and locked all the time in a designated cabinet for this purpose. Data will be stored in the School of Pharmacy computers where all files will be password protected and only the researcher will be allowed access. Storage will be responsibility of Professor Felicity Smith.

Please note it is the responsibility of the sponsor to ensure all patient identifiable data stored electronically is encrypted.

Research Passport – the researcher will require a letter of access from the three PCTs, which will be organised by us.

Please ensure that you:
1) Report all SUSARs (Serious unexpected serious adverse reaction) to the Research Ethics Committee and any affecting our patients should be reported to Sylvia Westrup. Failure to abide by this will result in the withdrawal of the Trust’s approval.

2) Respond to any requests from Brent PCTs, which hosts the audit function, and provide it with any project amendments, project extensions or terminations. PCTs are required by the Research Governance Framework to maintain a comprehensive database of all research projects.

3) Inform us that the study has been completed by sending a copy of the NRES ‘Declaration of the End of Study’ form (or completing our brief end of study report form which will be emailed to you after the end date), a summary of the final report and the number of patients/staff from NW London who took part in your study.

4) If your study is on the NIHR CCN Portfolio study you are required to report recruitment information on a monthly basis to the specified network. This will ensure that the Trust will be allocated the necessary funding from the NW London CRN.

Please do not hesitate to contact Sylvia Westrup, (s.westrup@imperial.ac.uk) if you require further assistance.

With kind regards

Ricky Banarsee
Director WeLReN/Applied Research Unit at Brent PCT
North West London Research Management Governance Unit

Sent via email
PI / CI faten.ahtomoud@live.pharmacy.ac.uk
felicity.smith@pharmacy.ac.uk; s.dhillon@herts.ac.uk; Z.Aslanpour@herts.ac.uk
maureen.poylan@pharmacy.ac.uk (sponsor)

Chair : Marcia Saunders  Chief Executive : Rob Larkman
### Appendix 22: Pharmacies visiting timetables by Months.

<table>
<thead>
<tr>
<th>Day</th>
<th>Mon 7th May</th>
<th>Tu 8th May</th>
<th>We 9th May</th>
<th>Th 10th May</th>
<th>Fri 11th May</th>
<th>No. of visit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacy</td>
<td>Pharm 5</td>
<td>Pharm 3</td>
<td>Pharm 1</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Day</td>
<td>Mon 14th May</td>
<td>Tu 15th May</td>
<td>We 16th May</td>
<td>Th 17th May</td>
<td>Fri 18th May</td>
<td>No. of visit</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>Pharm 7</td>
<td>Pharm 6</td>
<td>Pharm 4</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Day</td>
<td>Mon 21st May</td>
<td>Tu 22nd May</td>
<td>We 23rd May</td>
<td>Th 24th May</td>
<td>Fri 25th May</td>
<td>No. of visit</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>Pharm 5</td>
<td>Pharm 3</td>
<td>Pharm 2</td>
<td>Pharm 1</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Day</td>
<td>Mon 28th May</td>
<td>Tu 29th May</td>
<td>We 30th May</td>
<td>Th 31st May</td>
<td>Fri 1st June</td>
<td>No. of visit</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>Pharm 7</td>
<td>Pharm 6</td>
<td>Pharm 4</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Day</td>
<td>Mon 4th June</td>
<td>Tu 5th June</td>
<td>We 6th June</td>
<td>Th 7th June</td>
<td>Fri 8th June</td>
<td>No. of visit</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>Pharm 5</td>
<td>Pharm 3</td>
<td>Pharm 1</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Day</td>
<td>Mon 11th June</td>
<td>Tu 12th June</td>
<td>We 13th June</td>
<td>Th 14th June</td>
<td>Fri 15th June</td>
<td>No. of visit</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>Fairview Pharmacy</td>
<td>Pharm 7</td>
<td>Pharm 6</td>
<td>Pharm 4</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Day</td>
<td>Mon 18th June</td>
<td>Tu 19th June</td>
<td>We 20th June</td>
<td>Th 21st June</td>
<td>Fri 22nd June</td>
<td>No. of visit</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>Pharm 5</td>
<td>Pharm 3</td>
<td>Pharm 2</td>
<td>Pharm 1</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Day</td>
<td>Mon 25th June</td>
<td>Tu 26th June</td>
<td>We 27th June</td>
<td>Th 28th June</td>
<td>Fri 29th June</td>
<td>No. of visit</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>Pharm 7</td>
<td>Pharm 6</td>
<td>Pharm 4</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Day</td>
<td>Mon 2nd July</td>
<td>Tu 3rd July</td>
<td>We 4th July</td>
<td>Th 5th July</td>
<td>Fri 6th July</td>
<td>No. of visit</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>Pharm 5</td>
<td>Pharm 3</td>
<td>Pharm 2</td>
<td>Pharm 1</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Day</td>
<td>Mon 9th July</td>
<td>Tu 10th July</td>
<td>We 11th July</td>
<td>Th 12th July</td>
<td>Fri 13th July</td>
<td>No. of visit</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>Pharm 7</td>
<td>Pharm 6</td>
<td>Pharm 4</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Day</td>
<td>Mon 16th July</td>
<td>Tu 17th July</td>
<td>We 18th July</td>
<td>Th 19th July</td>
<td>Fri 20th July</td>
<td>No. of visit</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>Pharm 5</td>
<td>Pharm 3</td>
<td>Pharm 2</td>
<td>Pharm 1</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Day</td>
<td>Mon 23rd July</td>
<td>Tu 24th July</td>
<td>We 25th July</td>
<td>Th 26th July</td>
<td>Fri 27th July</td>
<td>No. of visit</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>Pharm 7</td>
<td>Pharm 6</td>
<td>Pharm 4</td>
<td></td>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>
Appendix 23: Gantt chart for the study.

<table>
<thead>
<tr>
<th>Months</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>General activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PhD Induction courses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postgraduate training programme</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attend PhD Research Days</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st year report submission</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Year Viva examination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attend a national conference</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attend an international conference</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Literature search and background reading</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prepare &amp; develop research protocol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Submit research protocol for Ethics Committee approval</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obtain Ethics Committee approval</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research and development approval (R&amp;D)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recruiting community pharmacies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pilot work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data collection (recruiting patients + interviews)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data analysis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thesis write-up</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Submit draft thesis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correction &amp; submission of final thesis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PhD examination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Publishing 1st article</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Publishing 2nd article</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Months</td>
<td>Jan</td>
<td>Feb</td>
<td>Mar</td>
<td>Apr</td>
<td>May</td>
<td>Jun</td>
<td>Jul</td>
<td>Aug</td>
<td>Sep</td>
<td>Oct</td>
<td>Nov</td>
<td>Dec</td>
</tr>
<tr>
<td>------------</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>General activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PhD Induction courses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postgraduate training programme</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attend PhD Research Days</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Poster</td>
</tr>
<tr>
<td>1st year report submission</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Talk</td>
<td></td>
</tr>
<tr>
<td>First Year Viva examination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attend a national conference</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attend an international conference</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Literature search and background reading</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prepare &amp; develop research protocol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Submit research protocol for Ethics Committee approval</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obtain Ethics Committee approval</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research and development approval (R&amp;D)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recruiting community pharmacies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pilot work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data collection (recruiting patients + interviews)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data analysis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thesis write-up</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Submit draft thesis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correction &amp; submission of final thesis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PhD examination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Publishing 1st article</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Publishing 2nd article</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Months</td>
<td>Jan</td>
<td>Feb</td>
<td>Mar</td>
<td>Apr</td>
<td>May</td>
<td>Jun</td>
<td>Jul</td>
<td>Aug</td>
<td>Sep</td>
<td>Oct</td>
<td>Nov</td>
<td>Dec</td>
</tr>
<tr>
<td>--------</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td><strong>General activities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PhD Induction courses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postgraduate training programme</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attend PhD Research Days</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st year report submission</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Year Viva examination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attend a national conference</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attend an international conference</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Poster</td>
</tr>
<tr>
<td><strong>Research</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Literature search and background reading</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prepare &amp; develop research protocol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Submit research protocol for Ethics Committee approval</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obtain Ethics Committee approval</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research and development approval (R&amp;D)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recruiting community pharmacies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pilot work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data collection (recruiting patients + interviews)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data analysis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thesis write-up</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Submit draft thesis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correction &amp; submission of final thesis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PhD examination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Publishing 1st article</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Publishing 2nd article</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Months</td>
<td>Jan</td>
<td>Feb</td>
<td>Mar</td>
<td>Apr</td>
<td>May</td>
<td>Jun</td>
<td>Jul</td>
<td>Aug</td>
<td>Sep</td>
<td>Oct</td>
<td>Nov</td>
<td>Dec</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td><strong>General activities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PhD Induction courses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postgraduate training programme</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attend PhD Research Days</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st year report submission</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Year Viva examination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attend a national conference</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attend an international conference</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Research</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Literature search and background reading</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prepare &amp; develop research protocol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Submit research protocol for Ethics Committee approval</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obtain Ethics Committee approval</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research and development approval (R&amp;D)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recruiting community pharmacies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pilot work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data collection (recruiting patients + interviews)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data analysis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thesis write-up</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Submit draft thesis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correction &amp; submission of final thesis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PhD examination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Publishing 1st article</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Publishing 2nd article</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 24: Case studies of 80 participants.

Case studies of 20 participants identified as having medicine-use issues only.

<table>
<thead>
<tr>
<th>Case study</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Case 102-PAK-M-65</strong></td>
<td>65 year old Pakistani male taking Ramipril, Amlodipine, Atorvastatin. He reported forgetting to take his medicines once or twice a year (‘rarely’ on the Likert scale) (301).</td>
</tr>
<tr>
<td><strong>Case 103-BNG-M-45</strong></td>
<td>45 year old Bangladeshi male taking Metformin, Atorvastatin, Citalopram, Co-dydramol, Tamsulosin, Omeprazole. He reported reducing the dose of Metformin from 2 tablets three times a day to 1 tablet after breakfast and after lunch and 2 tablets after dinner (‘sometimes’ on the Likert scale) (201) because of experiencing tiredness, legs’ weakness and stomach problem as side effects of taking Metformin (101). He also revealed reducing the dose of Atorvastatin from one tablet at night to none at night (‘sometimes’ on the Likert scale) because of having shortness of breath as a side effect of taking Atorvastatin. He declared forgetting to take his medicines (‘often’ on the Likert scale) (301). He took over-the-counter (OTC) Paracetamol when required and prescription-only medicine (POM) Co-dydramol which was prescribed in a hospital A&amp;E department (402).</td>
</tr>
<tr>
<td><strong>Case 215-AR-M-40</strong></td>
<td>40 year old Arabic male taking Risperidone, Mirtazapine, Lansoprazole. He revealed that he was increasing the doses of Risperidone, Mirtazapine, Lansoprazole once or twice a month from 1 tab a day to 2 tab a day (‘sometimes’ on the Likert scale) when he was feeling unwell (202). He reported forgetting to take his medicines once a month (‘sometimes’ on the Likert scale) (301).</td>
</tr>
<tr>
<td><strong>Case 304-IN-F-77</strong></td>
<td>77 year old Indian female taking Amlodipine, Aspirin, Rosuvastatin, Ezetimibe. She reported experiencing hair loss as a side effect of taking Simvastatin (101). She revealed forgetting to take her medicines once or twice a year (‘rarley’ on the Likert scale) (301).</td>
</tr>
<tr>
<td><strong>Case 307-AR-M-52</strong></td>
<td>52 year old Arabic male taking Diclofenac tabs, Diclofenac gel, Amitriptyline, Tramadol, Paracetamol, Omeprazole. He reported experiencing stomach pain as a side effect of taking Diclofenac (101). He revealed forgetting to take his medicines once or twice a week (‘sometimes’ on the Likert scale) (301).</td>
</tr>
<tr>
<td><strong>Case 309-AR-F-44</strong></td>
<td>44 year old Arabic female taking Humalin S, Humalin I, Novomix 30, Metformin, Pregabalin, Perindopril, Sertraline, Salbutamol inh, Salmeterol inh, Beclometasone inh, montelukast, Aspirin, Atrovastatin, Omeprazole, Colecalciferol, Ferrous fumarate, Paracetamol. It was identified that she was taking Salbutamol regularly (2 puffs twice a day) instead of taking it when required (202). She reported taking 1 puff twice or three times a day from Beclometasone and Salmeterol inhalers. She was instructed to take 2 puffs twice a day from Beclometasone and Salmeterol inhalers (201). It was also identified that she reduced the dose of Humalin I from 10units in the morning and 14 units in the evening to only 12 units in the evening. She reported experiencing weight gain as a side effect of taking Insulin (101). She revealed having difficulties opening containers (302).</td>
</tr>
<tr>
<td><strong>Case 314-AR-M-61</strong></td>
<td>61 year old Arabic male taking Metformin, Gliclazide, Simvastatin, Omeprazole, Ibuprofen, Tramadol, Senna. He was prescribed one tablet to be taken three times a day.</td>
</tr>
<tr>
<td><strong>Case 403-AR-F-60</strong></td>
<td>60 year old Arabic female taking Amitriptyline, Pravastatin, Tramadol, Trazodon, ProD3, Gaviscon, Colecalciferol, Diclofenac. She revealed forgetting to take her night medicines especially painkillers (‘sometimes’ on the Likert scale) (301). She reported that she sometimes had difficulties opening containers or pulling out tablets because of her arthritic pain (302).</td>
</tr>
<tr>
<td><strong>Case 405-AR-M-64</strong></td>
<td>64 year old Arabic male taking Novomix, Metformin, Losartan,-Benzafibrate, Simvastatin, Paroxetine, Risperidone, Paracetamol. He had been feeling tired and had been sweating and shaking since he started taking Insulin (101). When asked about why he was taking Cod liver oil and Garlic tablets, he could not recall the right reasons (405).</td>
</tr>
<tr>
<td>Case study</td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td></td>
</tr>
<tr>
<td><strong>Case 406-AR-M-67</strong> was a 67 year old Arabic male taking Metformin, Gliclazide, Lisinopril, Aspirin, Simvastatin, Co-dydramol, Amitriptyline, Salbutamol, Tiotropium, Budesonide/Formoterol, Montelukast, Omeprazole, Calcium carbonate, Senna, Lactulose, Aqueous cream. He reported taking One tablet 80 mg of Gliclazide twice a day (202) after food (214). He was prescribed half a tablet to be taken twice a day 30 minutes before food. He declared difficulties opening containers/packs because of his arthritic pain(302).</td>
<td></td>
</tr>
<tr>
<td><strong>Case 501-PAK-M-68</strong> was a 68 year old Pakistani male taking Novomix, Metformin, Gliclazide, Ramipril, Budesonide + Formoterol (Symbicort®), Simvastatin. He disclosed that he had been taking Metformin sometimes 2 tablets twice a day and sometimes 1 tablet twice a day (201). Metformin was prescribed to be taken as 2 tablets twice a day. He also reported stop taking his medicines in Ramadan and when travelling abroad.</td>
<td></td>
</tr>
<tr>
<td><strong>Case 506-PAK-F-78</strong> was a 78 year old Pakistani female taking Metformin, Sexaglibtin, Perindopril, Amlodipine, Omeprazole, Simvastatin, Aspirin, Co-dydramol. She reported feeling sick and noxious as a side effect of taking Metformin (101). She declared forgetting to take pain killer medicine [Co-dydramol] once or twice a year (‘rarely’ on the Likert scale) (301).</td>
<td></td>
</tr>
<tr>
<td><strong>Case 609-OSA-M-80</strong> was an 80 year old male from other South Asian background taking Warfarin, isosorbide mononitrate, Furosemide, Amlodipine, Lansoprazole, Penicillin v, Calcium carbonate and colecalciferol. He reported experiencing itch rash as a side effect of taking Alendronic acid (101). He reported stop taking ISMN and Lanzoprazole for 3 days last month (201). He reported forgetting to take his medicines once a month (‘sometimes’ on the Likert scale) (301).</td>
<td></td>
</tr>
<tr>
<td><strong>Case 610-IN-M-80</strong> was an 80 year old Indian male taking Irbesartan, Ramipril, Metformin, Simvastatin, Aspirin, Folic acid, Cyanocobalamine, Omega-3. He reported experiencing constipation as a side effect of taking Irbesartan and Metformin (101).</td>
<td></td>
</tr>
<tr>
<td><strong>Case 612-IN-M-45</strong> was a 45 year old Indian male taking Pioglitazone+Metformin, Gliclazide, Simvastatin, Cyanocobalamin. It was identified that he was taking Gliclazide tablet after food (214). Gliclazide is best to be taken 30 minutes before breakfast. He revealed forgetting to take his afternoon tablet (301).</td>
<td></td>
</tr>
<tr>
<td><strong>Case 615-IN-M-74</strong> was a 74 year old Indian male taking Amlodipine, Irbesartan, Allopurinol, Folic acid, Calcium carbonate + colecalciferol, Cyanocobalamine, Paracetamol, Tamsulosin, White soft paraffin and liquid paraffin cream. He reported experiencing dizziness sometimes as a side effect of taking Amlodipine (101)</td>
<td></td>
</tr>
<tr>
<td><strong>Case 702-IN-M-57</strong> was a 57 year old Indian male taking Metformin, Pioglitazone, Gliclazide, Ezetimibe, Keppra, Sodium Valproate, Dosulepin, Aspirin, Adcal-D3, Co-codamol, Dutasteride, Omeprazole, Ventolin, Viscoat overs, Ganfort. He revealed experiencing indigestion as side effects of taking Tegretol (101). He declared forgetting to take his medicines (‘very often’ on the Likert scale) (301).</td>
<td></td>
</tr>
<tr>
<td><strong>Case 705-IN-M-64</strong> was a 64 year old Indian male taking Novomix, Metformin, Losartan, Aspirin, Simvastatin. He declared forgetting to take his medicines once a year (‘sometimes’ on the Likert scale) (301).</td>
<td></td>
</tr>
<tr>
<td><strong>Case 706-IN-F-62</strong> was a 62 year old Indian female taking Bendroflumethiazide, Enalapril, Methotrexate, Co-codamol, Calcipotriol+betamethasone oint, Mometasone, Loratidine, Folic acid, Omeprazole. She revealed forgetting to take her medicines (‘rarely’ on Likert scale) (301). She declared difficulties pulling out Omeprazole tablets (302).</td>
<td></td>
</tr>
<tr>
<td><strong>Case 707-IN-F-67</strong> was a 67 year old Indian female taking Amlodipine, Candesartan, Simvastatin, Adcal-D3. She revealed experiencing stomach upset as side effects of taking uncoated Simvastatin (101) and she requested to have a coated statin.</td>
<td></td>
</tr>
</tbody>
</table>
Case studies of four participants identified as having service-use issues only.

<table>
<thead>
<tr>
<th>Case study</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Case 207-AR-F-40</strong> was a 40 year old Arabic female taking Warfarin and co-codamol. She had been prescribed Warfarin for a year and a half (507). However, she had DVT and PE induced by surgery, which required only 3 months of Warfarin therapy. She reported poor communication between hospital doctor and GP regarding whether she had to stop or continue taking Warfarin (603).</td>
<td></td>
</tr>
<tr>
<td><strong>Case 504-PAK-M-81</strong> was an 81 year old Pakistani male taking Amlodipine, Valsartan, Atenolol, GTN, Salbutamol, Clenil modulate inhaler, Aspirin, Clopidogrel, Simvastatin, Co-codamol, Paracetamol, Quinine sulphate, Amitriptyline, Cyanocobalamin, Ranitidine, Gaviscon advance, Piroxicam gel, Celluvisc eye drops, Hypromellose eye drops. When asked about why he was taking Clenil modulate, Amitriptyline and Cyanocobalamin, he couldn’t state the reasons (701). He reported difficulties making appointments to consult his regular GP (909). It was identified that he was prescribed two analgesics containing Paracetamol as an active ingredient [Co-codamol and Paracetamol] (502). He was also prescribed two eye drops to treat tear deficiency which were in the same BNF group 8.11 [Celluvisc eye drops and Hypromellose eye drops] (502).</td>
<td></td>
</tr>
<tr>
<td><strong>Case 505-PAK-M-57</strong> was a 57 year old Pakistani male taking Atenolol, Ramipril, Bendroflumethiazide, GTN, ISMN, Insulin Detemir, NovoRapid Insulin, Metformin, Vildagliptin, Omeprazole, Paracetamol, Atrovastatin, Amitriptyline, Prochlorperazine, Betamethasone, Viscotears liquid gel. He reported experiencing problems with the attitude of receptionists in the GP surgery (913). He revealed poor communication between hospital doctors and GPs regarding changes to medicines (603). He declared delay renewal of repeat prescription after his supply of medicines run out on different occasions (806).</td>
<td></td>
</tr>
<tr>
<td><strong>Case 703-IN-M-60</strong> was a 60 year old Indian male Furosemide, Ramipril, Cardvedilol, Spironolactone, Aspirin, Simvastatin, Novomix, Humalog mix, Metformin, Ventolin, Fluticasone, Eltroxin, Omeprazole. He declared that he sometimes delayed renewal of repeat prescription after his supply of medicines run out (806).</td>
<td></td>
</tr>
</tbody>
</table>
Case studies of 49 participants identified as having both medicine-use and service-use issues combined.

<table>
<thead>
<tr>
<th>Case study</th>
<th>Case details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Case 101-BNG-M-48</strong> was a 48 year old Bangladeshi male taking Bendroflumethiazide, Omeprazole, Simvastatin. He disclosed that he had been taking Omeprazole only when needed, rather than taking one tablet a day (201) as prescribed. He reported difficulties getting an appointment to see the GP (901).</td>
<td></td>
</tr>
<tr>
<td><strong>Case 105-TRK-F-33</strong> was a 33 year old Turkish female taking Metformin, Simvastatin, Calcichew-D3, Aripiprazole. She was experiencing difficulties remembering to take her medicines because she had mental problem (‘sometimes’ on the Likert scale) (301). It was identified that she was reducing the dose of Metformin from one tablet three times a day to one tablet twice a day (201). She would like to have more information on her illness (702) and on her medicines (701).</td>
<td></td>
</tr>
<tr>
<td><strong>Case 106-BNG-M-66</strong> was a 66 year old Bangladeshi male taking Amlodipine, Atenolol, Ramipril, GTN, Insultard Innolet, Metformin, Aspirin, Simvastatin, Paracetamol. He disclosed that he was taking two tablets twice a day from Metformin instead of taking one tablet twice a day (202). In addition, it was identified that he was taking one puff from GTN every morning. He also revealed that he was taking Simvastatin in the morning (214). When asked about why he was taking Simvastatin, GTN and Ramipril, he could not state the correct reasons (701).</td>
<td></td>
</tr>
<tr>
<td><strong>Case 107-OSA-M-57</strong> was a 57 year old Sri Lankan male taking Insulin Novorapid, Insulin Glargine, Metformin, Doxazosin, Propranolol, Ramipril, Simvastatin, Amitriptyline, Zopicone, Citalopram, Tramadol, Co-codamol, Macrogol compound, Senna, Docucate. He was prescribed two stimulant laxatives which were in the same BNF group 1.6.2 [Senna and Docusate] (502). He disclosed that he had been taking Propranolol one tablet in the morning, rather than taking one twice a day as instructed (201). When asked about why he was taking Cod liver oil, Multivitamins and Garlic tablets, he stated that his wife asked him to take those tablets (405). He reported experiencing swelling in the legs as a side effect of taking Amlodipine (101). It was identified that he was unsure of the Doxazosin dosing frequency (207). At the beginning, he took one tablet three times a day and then his GP told him to take two tablets in the morning only. The dosing frequency recorded in the records was one tablet three times daily. He revealed forgetting to take his medicines once a month (‘sometimes’ on the Likert scale) (301). He declared delay renewal of repeat prescription twice or three times a year after his supply of medicines [Other than diabetic and BP] run out (806).</td>
<td></td>
</tr>
<tr>
<td><strong>Case 201-AR-F-62</strong> was a 62 year old Arabic female. She disclosed that she had been taking Omeprazole only when needed, rather than taking one tablet a day (201) and when she had a strong stomach pain, she took 2 to 3 tablets a day. She reported taking antidepressant tablets when required. However, she was prescribed one tablet to be taken daily. She revealed forgetting to take her medicines (‘often’ on the Likert scale) (301). She declared difficulties reading labels (303), hearing instructions (304) and opening containers/packs (302). When asked about why she was taking Omega-3 tablets, she could not disclose the exact reason (405). She reported difficulties consulting the same GP (909), getting an appointment to see the GP (901), consulting GP (904) and pharmacist (903). She stated that the pharmacy had never had complete stock (906).</td>
<td></td>
</tr>
</tbody>
</table>
Case study

**Case 202-AR-F-61** was a 61 year old Arabic female taking Lisinopril, Ibuprofen, Co-codamol, Mirtazapin, Prochlorperazine, Ispaghula, Calcichew D3, Orlistat, Anusol cream. It was identified that Omeprazole had been missing from her regime (501). She reported taking Ibuprofen, Mirtazapin and Prochlorperazine only when needed (201). She was prescribed one tablet daily from Mirtazapin and one tablet three times a day from both Ibuprofen and Prochlorperazine. She revealed difficulty opening containers because of her arthritis pain (302). She reported lack of hospital referral for her dizziness and legs problems (910). When asked about how well this arrangement at her GP surgery suited her, she disclosed problems with waiting time in the GP (911), getting appointment to see GP (901), attitude of receptionists (913) and length of consultations (912). She reported that she required more information on the reasons for her legs problems (702).

**Case 203-AR-M-63** was a 63 year old Arabic male taking Metformin, Gliclazide, Pioglitazone, Ramipril, Atorvastatin, Bezafibrate and Etoricoxib. He reported stop taking Pioglitazone (208) because of experiencing rash on his hands that he thought the Pioglitazone might be a possible cause of it (101). He disclosed that he sometimes was taking one tablet three times a day from Metformin instead of taking two tablets three times a day (201). He also revealed that he sometimes took Metformin before food rather than with food or after food (214). He also declared taking Aspirin as an OTC medicine one tablet a day. Concomitant use of low dose Aspirin with Etoricoxib, which he was prescribed, may result in an increased rate Gl ulceration or disorder (402). When asked about when he took his Metformin tablets, he stated taking them before or after food (701).

**Case 204-AR-F-45** was a 45 year old Arabic female taking Methotrexate, Diclofenac sodium, Folic acid, Calcichew-D3 and Alendronic acid. She reported suffering itchy rash and redness of the skin as a side effect of Humira® (101). She revealed under using her Diclofenac tablets because of having ulcer caused by Diclofenac. Thus, her doctor changed the dosage form of Diclofenac from tablets to suppositories (212) and prescribed Omeprazole (503). She reported feeling sick, dizzy, drowsy and nauseated as side effects of taking Methotrexate. She disclosed difficulties opening Calcichew-D3 container when she had arthritis flare-ups (302). She reported that she forgot to take her Diclofenac and Calcichew-D3 sometimes (301). She also revealed that she had not been given enough information on illness and medicine (701, 702) and that she wanted more discussion with her consultant. She stated having difficulties getting appointments to see the GP (901).

**Case 205-AR-F-57** was a 57 year old Arabic female taking Metformin, Omeprazole, Simvastatin, Adcal-D3, Zocilone, Venlafaxine, Fesoterodine, Tramadol and Paracetamol. She reported experiencing dryness all over her body including her mouth and skin, that she thought the Fesoterodine and Venlafaxine might be potential causes of it (101). She also revealed having hair loss as a side effect of taking her medicines and not drinking enough water. She also reported having itchy spots around her tummy which she expected to be a possible side effect of taking Simvastatin. She disclosed difficulties dissolving the Fesoterodine tablets easily in her mouth (212). She declared underusing her medicines in Ramadan especially Metformin, which she was taking 2 tablets a day from it rather than 3 tablets (201). She revealed forgetting to take her medicines once or twice a day (‘very often’ on the Likert scale) (301). She requested more information on diabetes, new and current medicines and on how to manage her medicines in Ramadan (701, 702). When asked about how well this arrangement at her GP surgery suited her, she disclosed problems with bad attitude from receptionists (913) and short length of consultations (912) which inhibited her from fully disclosing her problems with the GP regarding the use of her medicines.
### Case study

**Case 206-AR-M-66** was a 66 year old Arabic male taking Furosemide, Bendrofulmethiazide, Ramipril, Bisoprolol, Spironolactone, Doxazosin, Isosorbide mononitrate (ISM), Novomix 30, Metformin, Atorvastatin, Clopidogrel, Omeprazole, Ipratropium, Ferrous fumarate, Amitriptyline, Pregabalin, Cinnarizine, Dihydrocodeine, Paracetamol, Allopurinol, Movelt cream. He reported that he underused his Insulin when his sugar level was normal ('sometimes' on the Likert scale) (201) and because he did not feel comfortable using a needle and syringe (212). When asked about why he was taking Ipratropium, Amitriptyline and ISMN, he couldn’t state the reasons (701). Finally, he had not received an pharmacy leaflet when one of his medicines was dispensed during the interview (907).

**Case 208-PAK-F-35** was a 35 year old Pakistani female taking Ventolin, Seretide 250, Singular, Lansoprazole, Levothryoxine, Diazepam. She reported taking Salbutamol regularly (around 20 puffs) each day instead of taking it when required (202). She reported difficulties making appointment at the GP surgery (901) and consulting the same GP (909). She also disclosed problems with long waiting time (911) and lack of hospital referral (910). She revealed taking Ibuprofen as an OTC medicine which is contraindicated in asthmatic patients (403) and may increase the risk of bleeding when Ibuprofen is taken with SSRIs such as Citalopram that the patient was using (402).

**Case 209-AR-M-49** was a 49 year old Arabic male taking Amlodipine, Atenolol, Ramipril, Metformin, Gliclazide, Simvastatin, Lansoprazole, Zopiclone, Gabapentin, Dosulepin, Diethylamine salicylate cream, Capsaicin cream. He had been told to take his Metformin tablets twice daily but on the pharmacy records it was read ‘take one three times a day’ and as a result was unsure of the dosing (207). He reported forgetting to take his medicines (‘Sometimes’ on Likert scale) and 4-5 times in the last month (301). He stated experiencing headache as a side effect of Atenolol (101). He revealed delay renewal of repeat prescription after his supply of diabetic and BP medicines run out on different occasions (806) which made him take diabetic and BP medicines that were prescribed for his mother until he ordered a repeat prescription (216).

**Case 210-AR-M-55** was a 55 year old Arabic male taking Metoprolol, GTN, Isosorbide dintrate, Aspirin, Atorvastatin, Metformin, Ranatidine, Etoricoxib, Amitriptyline, Co-codamol, Doxazosin, Zoplidem, Saxagliptin, Tamsulosin. It was identified that he was taking Metformin 850 mg one tablet a day rather than taking twice tablet a day and taking 20 mg a day from Atorvastatin instead of taking 40 mg a day (201) and the GP was not informed of this alteration. When asked about why and how many tablet he was taking from Doxazosin, he couldn’t state the reasons and the amount (701). He required information on whether Metformin had a bad effect on the Heart. He revealed that since he had an open heart surgery done for him 10 years ago, he had not had a heart catheterization and he uncovered that he did not regularly visit his GP at the surgery (602). He reported forgetting to take his medicines about twice a month (‘Sometimes’ on Likert scale) (301). He declared difficulties getting an appointment to see the GP (901) and problems with long waiting time inside the GP surgery (911). He stated that the pharmacy had never had complete stock (906).

**Case 211-IN-M-59** was a 59 year old Indian male taking Ramipril, Simvastatin, Colecalciferol and Escitalopram. He reported forgetting to take his Simvastatin about twice a year (‘rarley’ on Likert scale) (301).

**Case 212-AR-M-80** was an 80 year old Arabic male taking Salbutamol, Qvar, Simvastatin, Omeprazole, Betahistine, Tramadol, Vitamins, Paracetamol, Lidocaine hydrocortisone, hypromellose eye drops. He reported taking all his medicines when required apart from Simvastatin, although he was instructed to take Qvar, Omeprazole, Vitamins, Betahistine, Lidocaine hydrocortisone regularly (201). When asked about why he was taking Omeprazole, he couldn’t state the reason and he was not sure whether he had to take Omeperazole tablet before or after food (701). He disclosed problems with short length of consultations with his GP (912).
Case study

Case 213-AR-F-60 was a 60 year old Arabic female taking Humulin M3 insulin, Metformin, Lisinopril, Simvastatin, Ibuprofen, Paracetamol. She revealed taking two Metformin tablets per day and 30 units of Insulin in the morning and 20 units at night, although she was prescribed three Metformin tablets to be taken daily and 40 units of Insulin to be taken in the morning and in the evening (201). She declared difficulties getting an appointment to see the GP (901), and problems with short length of consultations with her GP (912).

Case 214-AR-M-45 was a 45 year old Arabic male taking Furosemide, Ramipril, Bisoprolol, Amlodipine, Aspirin, Metformin, Clopidogrel, Atorvastatin, Orlistat. He reported that he stopped taking Atrovastatin because he did not think it was necessary (208). He also revealed that he was reducing the dose of Metformin once or twice a month from 2 tabs a day to 1 tab a day (‘sometimes’ on the Likert scale) (201) because of forgetfulness and experiencing tachycardia and tiredness that he thought that Metformin might be a potential cause of these side effects (101). He reported forgetting to take his medicines once or twice a week (‘often’ on the Likert scale) (301). He declared requiring more information on medicines (701) and more regular monitoring and review from his GP (602). When asked about why he was taking from Bisoprolol, Atorvastatin and Furosemide, he couldn’t state the right reasons. He reported difficulties getting an appointment to see the GP (901), and problems with long waiting time in the GP surgery (911).

Case 216-AR-M-50 was a 50 year old Arabic male taking Bisoprolol, Aspirin, Simvastatin, GTN, Isosorbide mononitrate, Co-dydramol. He declared taking Simvastatin tablet in the morning rather than evening (214). He reported stop taking his medicines once or twice a month for 3 or 4 days when he was feeling better (‘sometimes’ on the Likert scale) (208). He revealed forgetting to take his medicines once or twice a week (‘often’ on the Likert scale) (301). He revealed delay renewal of repeat prescription two months ago after his supply of medicines run out which made him skip taking his medicines for two days (806).

Case 302-AR-M-83 was an 83 year old Arabic male taking Furosemide, Bendroflumethiazide, Perindopril, Amlodipine, Doxazosin, Aspirin, Novomix 30 flexepen insulin, Metformin, Salbutamol inhaler, Beclometasone CFC-f inhaler, Omeprazole, Simvastatin. It was identified that he was taking Salbutamol regularly (2 puffs four times a day) instead of taking it when required (202). He revealed delay renewal of repeat prescription sometimes after his supply of medicines run out (806).

Case 303-AR-F-53 was a 53 year old Arabic female taking Aspirin, Diazepam, Zopiclone, Gabapentin, Fluoxetine, Gaviscon, Omeprazole, Atrovastatin, Fesoterodine fumarate, co-codamol, Diclofenac tabs, Ibuprofen gel, Transvasin heat rub, Prochlorperazine, Adcal-D3. She had been prescribed Zopiclone for 17 years and Diazepam for 8 years (507). However, both Zopiclone and Diazepam are licensed for short-term use up to 4 weeks. She reported taking one tablet three times a day from Diazepam and Co-codamol regularly; although Diazepam and co-codamol were prescribed to be taken three times a day when required (202). She revealed stop taking Atrovastatin when she was feeling well (208). She revealed forgetting to take her medicines every day (‘very often’ on the Likert scale) (301). She declared difficulties getting an appointment to see the GP (901), and problems with length of consultations with her GP (912).

Case 305-AR-F-32 was a 32 year old Arabic female taking Propranolol, Metoclopramide, Folic acid, Amitriptyline, Adcal-D3, Diclofenac. She revealed that she was taking one tablet only when needed from Amitriptyline. She was prescribed one tablet to be taken at night regularly (201). It was also identified that she was reducing the dose of Adcal-D3 to one tablet a day or none a day, although she was instructed to take Adcal-D3 twice a day. She reported experiencing vomiting and feeling unwell as a result of the side effect of taking Diclofenac (101). She also revealed taking Metoclopramide, prescribed by her GP, for nausea and vomiting (503). She declared difficulties with long waiting time in the GP surgery (901), and problems with short length of consultations with her GP (912). She revealed delay renewal of repeat prescription last month after his supply of medicines run out because of not having enough money to pay for her prescription (806).
### Case study

**Case 306-AR-M-47** was a 47 year old Arabic male taking Pioglitazone+Metformin, Gliclazide, Simvastatin, Omeprazole. He revealed that he was increasing the doses of Pioglitazone+Metformin and Gliclazide from 1 tab twice a day and 2 tablets twice a day respectively to 1 tab three times a day and 2 tablets three times a day respectively, when his sugar level was elevating (202). He reported experiencing heartburn as a result of the side effect of taking Metformin (101). He also revealed taking Omeprazole, prescribed by her GP, for heartburn (503). He declared difficulties getting an appointment to see the GP (901).

**Case 308-AR-F-55** was a 55 year old Arabic female taking Propranolol, Simvastatin, Omeprazole, Adcal-D3, Naproxen. She reported forgetting to take her medicines once a week (‘sometimes’ on the Likert scale) (301). She declared difficulties getting an appointment to see the GP (901) and difficulties in consulting the same GP (909).

**Case 310-AR-F-43** was a 43 year old Arabic female taking Metformin, Gliclazide, Exenatide, Symbicort, Omeprazole. She had developed upset stomach and dry mouth, as a side effect of Insulin (101). She reported reducing the dose of Metformin from three tablets a day to two tablets a day during Ramadan (201). She reported forgetting to take Enexatide injection twice or three times a month (‘often’ on the Likert scale) (301). She declared difficulties getting an appointment to see her regular GP (909).

**Case 311-AR-F-45** was a 45 year old Arabic female taking Naproxen, Tranexamid acid, Fentanyl patches, Gabapentin, Mirtazapine, Fluoxetine, Amitriptyline, Omeprazole, Ranitidine. It was identified that she splitted the dose of Fluoxetine to one tablet three times a day when should be taken as three tablets in the morning (209). The use of a tricyclic antidepressant [Amitriptyline] may result in increase in plasma antidepressant concentrations and possibly antidepressant toxicity when fluoxetine is added (103). She declared difficulties opening containers or applying patches on her back because of her arthritic pain (302). She revealed under using Fluoxetine and Amitriptyline tablets, which should be taken regularly, when her pain was under control (201). She reported forgetting to take her medicines (‘sometimes’ on the Likert scale) (301). It was identified that she was taking both ranitidine and omeprazole (502). She revealed delay renewal of repeat prescription for Fentanyl patches twice after her supply run out (806).

**Case 312-AR-M-50** was a 50 year old Arabic male taking Bisoprolol, Ramipril, Atorvastatin, Aspirin, Fluoxetine. He reported forgetting to take his Aspirin once a month (‘sometimes’ on the Likert scale) (301). Because his Aspirin was in a form of dispersible tablets so while he was waiting for the tablet to dissolve in the water, he took his other medicines and forgot to take Aspirin.

**Case 313-AR-F-44** was a 44 year old Arabic female taking Salbutamol, Seretide, Paracetamol. She revealed taking Seretide only when needed, although it was prescribed to be taken as two puffs twice a day (201). She declared difficulties getting an appointment to see the GP (901), difficulties in consulting the same GP (909) and problems with short length of consultations with the GP (912). She reported a lack of on formation on medicines from the GP and she requested more information on her medicines (701).

**Case 401-AR-F-40** was a 40 year old Arabic female taking Ventolin, Clenil modulate, Humira injection, Methotrexate, Co-tydramol, Diclofenac, Colecalciferol, Folic acid, Oilatum emollient, Lansoprazole, Isapugula, Diazepam. She reported experiencing stress and mood changes as side effects of taking Methotrexate (101). She took one puff twice a day from Beclometasone inhaler and on some occasions took one puff once a day (201). She revealed having problems with opening containers and pulling out tablets especially when experiencing flares (302). She had problems with the lack of referral to a hospital specialist (910). She revealed forgetting to take her medicines (‘sometimes’ on the Likert scale) (301). She declared difficulties getting an appointment to see the same GP (909), and problems with long waiting time in the GP surgery (911). She revealed delay renewal of repeat prescription on different occasions after her supply of medicines run out (806).
Case 402-AR-M-65 was a 65 year old Arabic male taking Metformin, Salbutamol, Co-dydramol, Cetomacrogol. He reported taking one tablet three times a day from Metformin; although Metformin was prescribed to be taken as one tablet twice a day (202). He declared forgetting to take his medicines especially when he was going out (‘rarely’ on the Likert scale) (301). He revealed delay renewal of repeat prescription on different occasions after his supply of medicines run out (806). She disclosed difficulties getting an appointment to see the doctor (901).

Case 404-AR-M-45 was a 45 year old Arabic male taking Metformin, Fluoxetine, Temazepam, Co-dydramol, Ibugel, Folic acid. He reported taking 2 tablets from Temazepam at night, 2 tablets from Fluoxetine in the afternoon and 2 tablets from Simvastatin one in the afternoon and one in the evening. He was prescribed one tablet from each to be taken daily (202). It was identified that he took one tablet daily from Metformin rather than 3 tablets daily as prescribed (201). He revealed forgetting to take his medicines (‘sometimes’ on the Likert scale) (301). He had been prescribed Temazepam for almost 10 years (507). He requested more information on his medicines (701). He reported delay renewal of repeat prescription on different occasions after his supply of medicines run out (806).

Case 407-AR-M-56 was a 56 year old Arabic male taking Atenolol, Amlodipine, Benzafibrate, Simvastatin, Aspirin. He revealed forgetting to take his medicines three or four times a year (‘sometimes’ on the Likert scale) (301). He reported delay renewal of repeat prescription on different occasions after his supply of medicines run out because he was a full-time worker (806).

Case 502-AR-F-65 was a 65 year old Arabic female taking Bisoprolol, Irbesartan, Clopidogrel, Fluticasone+Salmeterol, Calcichew-D3, Rosuvastatin, Ezetimibe, Diclofenac, Esmoprazole. She reported experiencing muscle pain and weakness as a side effect of taking Rosuvastatin (101). She revealed forgetting to take her evening tablets [Rosuvastatin and Bisoprolol] (‘rarely’ on the Likert scale) (301). She declared that she had stopped ordering further supplies of Salbutamol inhaler which was prescribed and was on her repeat form, because she did not need it (803).

Case 503-IRN-F-63 was a 63 year old Iranian female taking Aspirin, Cholecalciferol + Calcium carbonate, Levothyroxin, Simvastatin. She reported taking 2 tablets of Cholecalciferol + Calcium carbonate at once when should be taken as one tablet twice daily (213). She revealed delay renewal of repeat prescription on different occasions after her supply of medicines run out (806). She declared difficulties getting an appointment to see the GP (901), and problems with long waiting time in the GP surgery (911).

Case 507-AR-F-39 was a 39 year old Arabic female taking Diazepam, Fluoxetine, Zolpidem, Omeprazole, Diclofenac, Piroxicam. She had been prescribed Zolpidem for three years (507). Although, Zolpidem is not licensed for long term use and it should not be used for more than 4 weeks. Therefore, Zolpidem should not have been in her prescribed regime for more than 4 weeks (506). The problem was as a result of her GP. She reported experiencing internal skin rash as a side effect of taking Diazepam and Zolpidem (101). She revealed taking Omeprazole sometimes three tablets a day (202) and sometimes one or none a day depending on whether she had strong stomach pain or not (201). She was prescribed 20 mg Omeprazole tablets to be taken twice a day. She also declared increasing the dose of Zolpidem once a month from one tablet at night to 2 or 3 tablets at night especially before the period when she was feeling unwell. She disclosed feeling neglected, stressed and depressed because of the attitude of her GP (913). She had problems with the lack of referral to a mental health specialist (910).
### Case study

**Case 601-PAK-F-65** was a 65 year old Pakistani female taking Bendroflumethiazide, Metoprolol, Ramipril, Atorvastatin, Folic acid, Paracetamol. She had stopped taking Ramipril without informing her GP because she thought the Ramipril might be a potential cause of her stomach pain (208). She declared asking the GP before to stop taking her BP tablet but he advised her to avoid doing that. She reported taking a tablet and a half from the Metoprolol in the morning all at once (213). However, she should take half tablet three times a day. It was identified that Omeprazole had been missing from her regime (501); although she had told her GP that she was experiencing stomach pain. When asked about why she was taking Atorvastatin, she stated for ulcer (701).

**Case 602-PAK-M-54** was a 54 year old Pakistani male taking Perindopril, Amlodipine, Bisoprolol, Atorvastatin, Aspirin, Clopidogrel, Lansoprazole. He was prescribed antihistamine for allergy (503), which had been attributed to aspirin sensitivity. He revealed having stomach bleeding because of taking Aspirin on an empty stomach (101).

**Case 603-IN-M-51** was a 51 year old Indian male taking Bendroflumethiazide, Amlodipine, Perindopril, Omeprazole, Latanoprost eye drops, Diclofenac gel. He was prescribed diclofenac gel for aches and pains (503), which may have been attributed to a potential side effect of taking Mesalazine (Pantasa®). He had developed swollen legs and lethargy, as a side effect of Amlodipine (101). He revealed delay renewal of repeat prescription once or twice last year after his supply of medicines run out (806) which made him skipped taking his medicines because of not having extra supply at home (201). He required information on the reason for why all these aches and pains were occurring to him (702).

**Case 604-AR-F-52** was a 52 year old Arabic female taking Metformin, Gliclazide, Simvastatin, Hydroxychloroquine, Ibuprofen gel, Betahistin and Otomize spray. She reported having frequent headache, earache, vertigo and dizziness as a result of the side effect of taking Hydroxychloroquine (101). She also revealed taking Betahistin and Otomize spray, prescribed by her GP, for vertigo and earache (503). She declared experiencing a weight loss as a side effect of taking Metformin. She reported taking Hydroxychloroquine, 200 mg twice or three times a day sometimes depending on the level of arthritis pain, instead of 200 mg once a day and the GP was not informed of this alteration (202). She also stated taking Simvastatin in the morning rather than evening (214). She reported forgetting to take her medicines (‘often’ on Likert scale) (301). When asked about why she was taking Simvastatin, she got confused whether it was used for diabetes or for cholesterol (701). Finally, she had not received an information leaflet last time from the pharmacy when an antibiotic was dispensed to her (907).

**Case 605-IN-M-66** was a 66 year old Indian male taking Indapamide, Perindopril, Amlodipine, Doxazosin, Bisoprolol, GTN spray, Isosorbide mononitrate (ISMN), Aspirin, Clopidogrel, Atorvastatin, Lansoprazole. When asked about why he was taking Isosorbide mononitrate, he couldn’t tell the reason and he got confused between ISMN and Bisoprolol and ISMN and Amlodipine (701). He revealed delay prescription renewal, 2 or 3 times last year after his supply of medicines run out especially with Amlodpine because it was the only medicine that was prescribed for one month repeat supply whereas all his other medicines were for 2 months repeat supply (806). Thus, he wanted the repeat prescription service to be introduced at the pharmacy. He declared difficulties getting an appointment to see the GP (901) and that the GP didn’t like to discuss more than one problem at a time.

**Case 606-IN-M-81** was an 81 year old Indian Male taking Bumetanide, Carvedilol, Isosorbide mononitrate, Aspirin, Humalog Mix25, Pravastatin, Omeprazole, Lovastitoxine, Allopurinol, Citalopram, Maxepa. It was difficult for him to identify medicines he was taking currently on his repeat form (804). He reported having hearing (303) and reading difficulties (304). He had been experiencing stomach upset and nausea because of taking Senna (101).
Case 607-IN-F-75 was a 75 year old Indian female taking Doxazosin, Losartan, Metformin, Atorvastatin, Omeprazole, Betahistine, Co-codamol, Forceval caps, and hypromellose eye drops. She reported under using her medicines (‘often’ on Likert scale), mostly with Metformin and Insulin because of having stomach problems that prevent her from eating her food and medicines (201). She declared taking Senna; however, Senna was prescribed for her husband not for her (216). It was indicated that Insulin was no longer used although it was remaining on form (804). She reported having difficulties in reading because she was illiterate and could not speak, read or write English (303). She revealed having problems with opening containers due to her arthritis pain (302) and problems with swallowing big tablets (305). When asked about why she was taking Losartan, she couldn’t tell the reason (701). When asked whether she had enough information on her medicines, her daughter reported that her mother could not remember and got confused about why she should take each medicine. She declared delay taking her prescription to the pharmacy after her supply of medicines run out (806). She also reported experiencing lots of side effects with her medicines (101) because there was a problem with the pharmacy supplying medicines from various manufacturers and different brands (905) and thus the quality of her medicines may differ each month. She announced that the arrangement at the GP surgery was not bad but there were difficulties consulting the GP and diabetic nurse (902) and making appointment at the GP surgery generally (901). She revealed that the GPs would not conduct emergency home visits in Brent, whereas in Barent, where she had been living previously, he would because the area was full of White British. She also reported that the length of time spent on consultation was in and out (912). She believed that the doctors didn’t know what they were doing. For example, she declared that diabetes team did not understand that she had other problems that may lead to uncontrolled sugar level. Miscommunication on behalf of the team and lack of cultural understanding were reported by the participant. She also disclosed nurse’s lack of knowledge of diabetes and diabetes medications. Her daughter revealed having difficulties dealing with GP staff and that the GP staff did not make the effort to make her life easier (913).

Case 608-IN-F-50 was a 50 year old Indian female taking Gliclazide, Sitagliptin, Repaglinide, Amlodipine, Candesartan and Colecalciferol+calcium carbonate. She reported forgetting to take her medicines twice every 6 months (‘sometimes’ on the Likert scale) when she was rushing out to work (301). She revealed suffering abdominal pain and bloating as side effects of taking Metformin and Gliclazide (101). She reported that she had refused to use Insulin, which was recommended by her GP, because she did not feel comfortable using a needle and syringe in public and at work and because she was the only carer for her parents (212). She disclosed experiencing dizziness when taking repaglinide and gliclazide half an hour before food, because she forgot to eat after taking repaglinide and gliclazide. She declared not having regular monitoring or review (602). She reported difficulties making appointment at the GP surgery (901) and problems with short length of consultation (912). She wanted more information on side effects, drug-drug interactions long term effects of her current medicines (701). She revealed difficulty getting a hospital referral (910).

Case 611-IN-M-64 was a 64 year old Indian male taking Metformin, Gliclazide, Irbesartan, Amlodipine, Aspirin, Simvastatin. He reported taking one tablet twice a day from Metformin; although it was prescribed to be taken as one tablet once a day (202). When asked about how well this arrangement at his GP surgery suited him, he disclosed problems with attitude of receptionists (913).

Case 613-IN-M-64 was a 64 year old Indian male taking Novomix, Metformin, Gliclazide, Atenolol, Losartan, Aspirin, Atorvastatin, Amitriptyline. He revealed having external allergy from heat patches (102). He reported forgetting to take his afternoon and evening medicines once or twice a month (‘Rarely’ on the Likert scale) (301). He declared difficulties getting an appointment to see the same GP (909), and problems with short length of consultations with the GP (912). He disclosed delay taking his prescription to the pharmacy after her supply of medicines run out once or twice this year during the bank holidays’ time (806).
### Case study

<table>
<thead>
<tr>
<th>Case Study</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case 701-IN-M-77</td>
<td>A 77 year old Indian male taking Amiodarone, Furosemide, Bisoprolol, Amlodipine, Losartan, Metformin, Pioglitazone, Glimepiride, Aspirin, Atorvastatin, Omeprazole, Paracetamol, Goserelin, Tamsulosin, Quinine sulphate, Folic acid, Ferrous fumarate, Vitamin A+D. He was prescribed by the GP surgery the wrong dose of Amiodarone [200 mg three times daily] (504). He reported forgetting to take his morning and afternoon medicines once or twice a month ('sometimes' on the Likert scale) (301).</td>
</tr>
<tr>
<td>Case 709-IN-M-66</td>
<td>A 66 year old Indian male taking Furosemide, Nicorandil, Losartan, Bisoprolol, ISMN, Clopidogrel, Aspirin, Metformin, Rosuvastatin, Paracetamol, Omeprazole. He had told the specialist that he felt dizzy when taking Nicorandil and had skin pigmentation when taking Rosuvastatin and subsequently to these the Nicorandil dose was reduced and Rosuvastatin was still prescribed (101). He reported forgetting to take his morning tablets once to three times a year ('sometimes' on the Likert scale) (301). He requested more information about his medicines especially the side effects (701). He declared delay renewal of repeat prescription several times after his supply of medicines run out (806). When asked about how well this arrangement at his GP surgery suited him, he disclosed problems with getting appointment to see GP (901) and short length of consultations (912).</td>
</tr>
<tr>
<td>Case 710-IN-M-58</td>
<td>A 58 year old Indian male taking Carvedilol, Candesartan, Atorvastatin, Adcal-D3. He revealed forgetting to take his evening tablets twice a year ('rarely' on Likert scale) (301). He reported getting confused between two medicines because the pharmacy was supplying medicines from various manufacturers and suppliers (905).</td>
</tr>
<tr>
<td>Case 711-AR-F-18</td>
<td>An 18 year old Arabic female taking Ventolin, Symbicort, Quetiapine, Azelaic acid cream, Tretinoin. She reported forgetting to take her medicines every other day ('often' on Likert scale) (301). She revealed under using Quetiapine, Azelaic acid cream, Tretinoin ('sometimes' on Likert scale) (201). She also disclosed problems with long waiting time (911) and getting appointments to see GP (901). She declared delay renewal of repeat prescription several times after her supply of medicines run out which made her skip taking her medicines on time as instructed (806). She requested more information about the inflammation in her body (702).</td>
</tr>
<tr>
<td>Case 713-IN-M-64</td>
<td>A 64 year old Indian male taking Amlodipine, Irbesratan, Alendronic acid, Vitamin D3, Prednisolone, Co-codamol, Paracetamol. He reported experiencing fever, shortness of breath and abdominal pain as a side effect of taking Alendronic acid (101). It was identified that Omeprazole had been missing from his regime (501). Although, he was taking Alendronic acid and Prednisolone which are both linked with peptic ulceration and stomach discomfort. He declared suffering from stomach pain. It was identified that he was prescribed two analgesics containing Paracetamol as an active ingredient [Co-codamol and Paracetamol] (502).</td>
</tr>
</tbody>
</table>
Appendix 25: Publications.

Medicine use and medicine-related problems experienced by ethnic minority patients in the United Kingdom: a review

Faten Alhomoud, Soraya Dhillon, Zoe Aslanpour and Felicity Smith

Department of Practice and Policy, School of Pharmacy, University College London, London and School of Pharmacy, University of Hertfordshire, Hatfield, Herts, UK

Keywords
Inequality and ethnic minorities; medicine management; medicine-related problems; medicine use

Correspondence
Faten Alhomoud, The Department of Practice and Policy, School of Pharmacy, University College London, 22 Gordon Street, London WC1H 0CL, UK. Email: faten.alhomoud.11@ucl.ac.uk; f.k.alhomoud@gmail.com

Received February 6, 2012
Accepted September 26, 2012

doi: 10.1111/j.ipp.12007

Abstract

Objective The aim of this review was to establish type(s) and possible cause(s) of medicine-related problems (MRPs) experienced by ethnic minorities in the UK and to identify recommendations to support these patients in the effective use of medicines.

Methods A systematic search of studies related to problems with medicine use experienced by ethnic minorities in the UK was performed using the following databases: PubMed, Embase, International Pharmaceutical Abstracts and Soaps from 1990 to 2011. A hand search for relevant citations and key journals was also performed.

Key findings Fifteen studies were found. The MRPs identified across studies included lack of information, problems with not taking medicines as advised, concern of dependency on side effects, lack of regular monitoring and review, risk of adverse drug reactions, adverse events and problems in accessing healthcare services.

Many problems are common in other groups, however, studies examining possible explanatory factors discussed how the cultural and religious beliefs, previous experiences, different expectations, language and communication barriers, lack of knowledge of the healthcare services and underestimating patients’ desire for information may contribute to the problems. Some of the recommendations were made based on the problems that were found, but these have not been evaluated.

Conclusions Little evidence is known of what influences MRPs among ethnic minorities, despite the increased diversification of populations in countries throughout the world. To support their entire populations in the use of medicines, we have to ensure that we understand their different perspectives and needs regarding the effective use of medicines.

Introduction

The ethnic minority populations in the UK are growing substantially as a consequence of continued immigration, high birth rates and youthful age-structure. The 1991 and 2001 UK census, which both included a mandatory question on ethnic identity, revealed that the proportion of the UK population classifying themselves as belonging to a non-white minority group increased by 53% over this 0-year period, from 3 million to 4.6 million (or 7.9% of the UK population). The proportion of ethnic minority groups is expected to rise from 8% of the population, as recorded in the 2001 census, to 27% by 2031 and to 43% by 2056. Not only the UK but countries all over the world are diversifying in terms of ethnic makeup. Therefore, the needs and perspectives of different minority groups are of increasing importance to many countries, including the UK.

The term ‘ethnicity’ refers to a group or community that is assumed to share common cultural practices, history, religion, language and territory. Ethnicity is a concept that refers to all population groups. The ‘majority ethnic group’ is sometimes used to refer to the principal group in any society such as white British in the UK. The concept ‘ethnic minority’ refers to many diverse ethnic groups of extreme heterogeneity. The concept is used for groups that share minority status in their country of residence due to ethnicity,
place of birth, language, religion, citizenship and other
cultural differences.5,67 It sets apart a particular group in both
numerical and (often) socioeconomic terms. Members of
these groups are considered to practise different cultural
norms and values from the majority culture and (often) speak
a different mother tongue.57 Ethnic minority groups vary in
duration of stay, extent of acculturation and degree of access
to the majority culture. Ethnic minority groups include newly
arrived immigrants and (minority) groups that have been a
part of a country's history for hundreds of years.5
Unlike race, which is seen as inherited and thought to be visible in
physical differences,59 ethnicity is concerned with cultural
identity which is the focus of this review in relation to the use
of medicines.
The ethnic minority groups as identified in the UK census
2011 include 'Asian/Asian British', 'Black/African/Caribbean/
Black British', in addition to those identifying as 'Mixed'/
multiple ethnic group and 'Other ethnic group'.5 Although
the patterns of ethnic minority distribution may differ
difficult between groups, they tend to be more concentrated in urban
areas.8
People from many ethnic minorities tend to perceive them-
selves as less healthy than those in the general UK popula-
tion.10 In particular, those from the Indian subcontinent
reported ‘bad’ or ‘very bad’ health when they were asked to
self-report their health status.20 Despite their heterogeneity,
etnic minorities in general often have a higher prevalence of
chronic diseases including diabetes, cardiovascular disease,
rheumatoid and respiratory disease for which effective
management depends on the use of medicines.14,15
The higher prevalence of chronic diseases among ethnic
minority populations may lead to co-morbidities and mul-
tiple drug therapies and consequently medicine-related
problems (MRPs).14,15 Patients from different cultural back-
grounds may be expected to have their own perceptions and
beliefs which will affect their use of medicines. In addition,
etnic minority groups are associated with communication
and language barriers, and different experiences, needs
and expectations than the wider UK population which
may also influence their ability to manage their medicines
effectively.14,15 Moreover, it is acknowledged in most health-
care systems that ethnic minority groups have experienced
inequalities in health and in accessing healthcare serv-
ces.14,15,16 There has been extensive research on health prob-
lems of ethnic minority groups, especially access to care
which can result in differences in health outcomes, but there
has been little research which specifically examines medicines
use.17,18 Also, evidence suggests that medication-related
problems may be poorly met for these groups.14,15,18,20,25
Because the definitions of MRPs are wide and include
problems ranging from prescribing errors through to ob-
taining supplies, monitoring for appropriateness and patient
behaviours which influence their use, a broad definition of
MRPs by Gordon et al.26 was used in this review to include all
these aspects. Gordon et al. defined a MRP as 'any problem
experienced by a patient that may impact on their ability to
manage or take their medicines effectively'.26 The aim of this
review was to establish type(s) and possible contributing
factor(s) of MRPs experienced by ethnic minority popula-
tions in the UK and to identify interventions or recommen-
dations to support these groups in their use of medicines.
Methods
Data sources
Electronic databases of PubMed, Embase, International
Pharmaceutical Abstracts and Scopus were searched for the
period from 1990 to 2011. Reference lists of retrieved articles
and relevant review articles were manually examined for
further relevant studies. A band search of key journals the
International Journal of Pharmacy Practice, Pharmacy World
and Science and the Annals of Pharmacotherapy was also
performed.
Search terms and search strategy
Identifying studies of MRPs experienced by ethnic minorities
in the UK presented challenges. The review commenced with
two main keywords: medicine-related problem, 'ethnicity'
and 'United Kingdom'. Lists of search terms associated with
each keyword were generated from MeSH (medical subject
heading) terms in PubMed and term-mapping database in
Embase. The MeSH terms and map terms provide a consist-
ent way to retrieve information that may use different ter-
mology for the same concept. Relevant terms were also
handpicked from the literature during the course of the
review.24,25 Keywords not listed as MeSH or map terms were
searched as phrases using the free text search mode.
'Medicine-related problem' or 'Drug-related problem' are
not key words, MeSH terms or map terms. Thus, a number of
terms were required to describe problems related to the use of
medications such as adverse drug reaction, adverse drug
effects, drug therapy problem and medication error. A further
list of search terms was generated by referring to two key
papers. The first article was a review on MRP classification
systems by Van Mil et al.19 which provided an overview and
appraisal of classification of medicine-related problems for
use during the pharmaceutical care process and research in
pharmacy. The second article by Abraham et al.25 aimed to
develop and validate a tool to classify and assess MRPs in
which an MRP was referred to as 'treatment related problem'.
These two articles had also reported difficulties in identifying
previously published literature on MRPs from databases. Each article
suggested a list of search terms for 'medicine-related prob-
lems'. The search terms reported by these articles include drug

The different keywords used to search for relevant articles in this review are presented in Table 1.

A further difficulty was the limited reporting of the ethnic profile of participants in previous studies. It has been argued that the under-representation of minority ethnic groups in studies may be because participants of ethnic minorities fall to understand the importance of the research process or they are unable to participate because of language barriers.20–22 However, another possible explanation would be that some researchers have not received training or do not recognize the complexity or importance of incorporating the perspective of minority populations into their research and thus assume the cultural perspective or need of the majority in the conduct of their research.20–22

Selection criteria

The articles were selected through titles and abstracts by the first author of this paper (FA). The criteria for relevant studies were: (1) involving people from an ethnic minority background and aged over 18; (2) those reporting types and/or potential causes of MRPs and/or interventions or recommendations made to address the problems or to support ethnic minorities in the use of medicines; (3) studies reported in English and conducted in the UK; and (4) original research employing quantitative and/or qualitative methods as well as literature reviews.

Process of data extraction

Electronic databases were searched and duplicate articles were removed. All articles were reviewed manually by title, abstract and/or full text for relevance. The reference lists of retrieved articles and relevant review articles were manually examined for further applicable studies. The key journals were also manually screened for further relevant articles. Full-text manuscripts were reviewed either electronically or as hard copy for assessment. Information was extracted into a pro forma which included: primary author name and date of publication, study design and study duration, patients’ age, setting, sample, type(s) and possible cause(s) of MRPs, intervention or recommendations to address the problems or to support ethnic minorities in the use of medicines. Studies of MRPs experienced by ethnic minority patients in the UK are shown in Table 2.

Results

The electronic database search retrieved a total of 145 titles, of which two were duplicates. Screening of titles, abstracts and/or full texts for the remaining 143 identified that six were related to MRPs,23,24,26,27,28,30. Manual screening of the journals retrieved one article24 and a hand search of citations retrieved articles from the electronic database, and journals, which led to a further eight articles,24,26,27,28,30,31,32,36–38. Thus, 15 articles in total were included in this review. The summary of the literature review search process is illustrated in Figure 1.

Twelve of the 15 studies examined patients’ perspective on, and experiences of, the use of medicines in terms of views and actions regarding illness and the use of medicines.23,24,26,27,28,30–37 The remaining studies (n = 3) examined MRPs in terms of adverse drug reactions (ADRs),24,26,27 or adverse events (AEs).26–28

The studies included quantitative studies (n = 6),23,24,26,27,28,30–32 qualitative studies (n = 4),23,26,28,30–32 studies that combined quantitative and qualitative methods (n = 2),26,27 and systematic reviews (n = 2).26–28 Data were collected in surveys23,24,26,27,28,30 semi-structured interviews23,26,27,28,30,32 or focus-group interviews.24,26–28 Fourteen of the studies were conducted among adult populations and one included all ages.28 The settings of these studies were GP practice (n = 2),26,27 clinic (n = 4),23,24,26,28,32 community pharmacies (n = 2),24,26 community centres (n = 1),26 and patients’ homes (n = 3).27,28,30 The studies were carried out in the UK and a great number of ethnic minorities were involved such as South Asian,23,24,26,30 Afro-Caribbean23,24,26,30 and Chinese.26 Five of the 15 studies evaluated MRPs among patients with a specific long-term condition,23,24,26,30,31

Type(s) and possible cause(s) of medicine-related problems identified across studies

The MRPs identified by the literature search among ethnic minorities across the studies included limited knowledge of medicines as well as its consequences and therefore23,24,26,27,28,30–32 problems with not taking medicines as advised;23,24,26,27,28,30–32 high risk of ADRs23,24,26,27,28,30–32 drug interactions and AEs,23,24,26,28,32 concerns or fear of dependency or side effects of the drug;23,24,26,27,28,32 cognitive, physical and sensory problems affecting use of medicines;23,24,26,27,28,30–32 language and communication barriers,23,24,26,27,28,30–32 lack of regular monitoring and review of medicines;23,24,26,28,32 problems with non-prescription medicines23,24,26,27,28,30–32 and problems in the use of, and access to, healthcare services.23,24,26,27,28,30–32

The most frequently reported types of MRPs were: limited knowledge of illness, its consequences and treatment;23,24,26,27,28,30–32 and problems with not taking medicines as advised.23,24,26,27,28,30–32 These are common to other populations. However, in ethnic minority groups differing cultural perceptions or beliefs about health, illness, prescribed treatment and medical care may also impact on the use of
<table>
<thead>
<tr>
<th>Search terms for &quot;Medicine-related problem&quot;</th>
<th>And</th>
<th>Search terms for &quot;Ethnicity&quot;</th>
<th>And</th>
<th>Search terms for &quot;United Kingdom&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug-related problem(s)</td>
<td>Or</td>
<td>Ethnicity</td>
<td>Or</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>Drug therapy problem(s)</td>
<td>Or</td>
<td>Ethnic group(s)</td>
<td>Or</td>
<td>Ethnic group(s)</td>
</tr>
<tr>
<td>Drug self-medication(s)</td>
<td>Or</td>
<td>Ethnicity</td>
<td>Or</td>
<td>Ethnicity</td>
</tr>
<tr>
<td>Drug administration</td>
<td>Or</td>
<td>Ethnicity</td>
<td>Or</td>
<td>Ethnic group(s)</td>
</tr>
<tr>
<td>Drug safety</td>
<td>Or</td>
<td>Ethnicity</td>
<td>Or</td>
<td>Ethnicity</td>
</tr>
<tr>
<td>Drug adherence</td>
<td>Or</td>
<td>&quot;Majority groups&quot;</td>
<td>Or</td>
<td>&quot;Majority groups&quot;</td>
</tr>
<tr>
<td>Adverse drug reaction</td>
<td>Or</td>
<td>Ethnicity</td>
<td>Or</td>
<td>Ethnicity</td>
</tr>
<tr>
<td>Drug interaction</td>
<td>Or</td>
<td>&quot;Majority groups&quot;</td>
<td>Or</td>
<td>&quot;Majority groups&quot;</td>
</tr>
<tr>
<td>Drug formulation</td>
<td>Or</td>
<td>Ethnicity</td>
<td>Or</td>
<td>Ethnicity</td>
</tr>
<tr>
<td>Drug preparation</td>
<td>Or</td>
<td>Ethnicity</td>
<td>Or</td>
<td>Ethnicity</td>
</tr>
<tr>
<td>Drug screening</td>
<td>Or</td>
<td>Ethnicity</td>
<td>Or</td>
<td>Ethnicity</td>
</tr>
<tr>
<td>Drug-seeking behaviour</td>
<td>Or</td>
<td>Ethnicity</td>
<td>Or</td>
<td>Ethnicity</td>
</tr>
<tr>
<td>Drug toxicity</td>
<td>Or</td>
<td>Ethnicity</td>
<td>Or</td>
<td>Ethnicity</td>
</tr>
<tr>
<td>Drug use</td>
<td>Or</td>
<td>Ethnicity</td>
<td>Or</td>
<td>Ethnicity</td>
</tr>
<tr>
<td>Drug monitoring</td>
<td>Or</td>
<td>Ethnicity</td>
<td>Or</td>
<td>Ethnicity</td>
</tr>
<tr>
<td>Drug utilization</td>
<td>Or</td>
<td>Ethnicity</td>
<td>Or</td>
<td>Ethnicity</td>
</tr>
<tr>
<td>Medication-related problem(s)</td>
<td>Or</td>
<td>Ethnicity</td>
<td>Or</td>
<td>Ethnicity</td>
</tr>
<tr>
<td>Medication error</td>
<td>Or</td>
<td>Ethnicity</td>
<td>Or</td>
<td>Ethnicity</td>
</tr>
<tr>
<td>Medication adherence</td>
<td>Or</td>
<td>Ethnicity</td>
<td>Or</td>
<td>Ethnicity</td>
</tr>
<tr>
<td>Medication compliances</td>
<td>Or</td>
<td>Ethnicity</td>
<td>Or</td>
<td>Ethnicity</td>
</tr>
<tr>
<td>Medication therapy management</td>
<td>Or</td>
<td>Ethnicity</td>
<td>Or</td>
<td>Ethnicity</td>
</tr>
<tr>
<td>Therapy-related problem(s)</td>
<td>Or</td>
<td>Ethnicity</td>
<td>Or</td>
<td>Ethnicity</td>
</tr>
<tr>
<td>Treatment-related problem(s)</td>
<td>Or</td>
<td>Ethnicity</td>
<td>Or</td>
<td>Ethnicity</td>
</tr>
<tr>
<td>Pharmaceutical care issues</td>
<td>Or</td>
<td>Ethnicity</td>
<td>Or</td>
<td>Ethnicity</td>
</tr>
<tr>
<td>Study Title</td>
<td>Study Design</td>
<td>Setting</td>
<td>Sample Size</td>
<td>Sample Description</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------</td>
<td>---------</td>
<td>-------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>Primary Source</td>
<td>Study Design and Study Setting</td>
<td>Age (years)</td>
<td>Setting</td>
<td>Sample Size</td>
</tr>
<tr>
<td>Vignelli et al. (1994)</td>
<td>Qualitative study</td>
<td>Not stated</td>
<td>Setting</td>
<td>Not stated</td>
</tr>
<tr>
<td>Close et al. (2002)</td>
<td>Case study</td>
<td>20-45 Chinese mothers</td>
<td>Setting</td>
<td>40 Chinese mothers</td>
</tr>
<tr>
<td>Lip (2009)</td>
<td>Cross-sectional survey</td>
<td>Mean age: 69 ± 9</td>
<td>Setting</td>
<td>44% White European, 31% Indian Asian, 25% African Caribbean</td>
</tr>
<tr>
<td>Snieh et al. (2004)</td>
<td>Qualitative study</td>
<td>Mean age: 62.5 years</td>
<td>Setting</td>
<td>50 Indian, 24.1% Asian, 22.1% African Caribbean</td>
</tr>
<tr>
<td>Lip (2004)</td>
<td>Cross-sectional survey</td>
<td>Mean age: 65 ± 10</td>
<td>Setting</td>
<td>93% Chinese, 49.1% Indian Asian, 22.4% African Caribbean, 6.1% Other</td>
</tr>
<tr>
<td>Perihan et al. (2004)</td>
<td>Qualitative study</td>
<td>Mean age: 62.5 years</td>
<td>Setting</td>
<td>93% Chinese, 49.1% Indian Asian, 22.4% African Caribbean, 6.1% Other</td>
</tr>
<tr>
<td>Primary author(s)</td>
<td>Design and method</td>
<td>Sample</td>
<td>Setting</td>
<td>Types of problems identified</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------------</td>
<td>--------</td>
<td>---------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Youngner (2006)</td>
<td>Focus group interviews</td>
<td>19/26</td>
<td>Community centres</td>
<td>Health service barriers; Intentional and unintentional non-adherence with drug regimen; Cognitive problems affecting use of medications; Lack of knowledge of illness as well as its treatment; Concerns about side effects of medications; Problems with accessing healthcare services.</td>
</tr>
<tr>
<td>Gordon (2005)</td>
<td>Observational cross-sectional study using in-depth interviews</td>
<td>20 to 87</td>
<td>Patients' homes, 32 patients from Pakistan and India</td>
<td>Problems with taking medications; Unskilled use of medicines; Fear of dependency.</td>
</tr>
<tr>
<td>McDowell (2004)</td>
<td>Systematic review and meta-analysis</td>
<td>Not stated</td>
<td>Not stated</td>
<td>Last 4 Asian and black</td>
</tr>
<tr>
<td>Gordon (2007)</td>
<td>Focus group in-depth interviews</td>
<td>18</td>
<td>Patients' homes, 32% white and 17% black.</td>
<td>Perceptions of use effects and methods of coping; Visions and dreams regarding the use of medications; Cognitive, physical, and sensory problems affecting use of medications; Lack of information understanding appropriate use of medications; Problems in service access.</td>
</tr>
<tr>
<td>Study</td>
<td>Study Design</td>
<td>Methods</td>
<td>Participants</td>
<td>Main Findings</td>
</tr>
<tr>
<td>-------</td>
<td>--------------</td>
<td>---------</td>
<td>--------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Cantor [22]</td>
<td>Face-to-face interviews</td>
<td>Outpatient Rheumatology Department</td>
<td>500 patients of South Asian descent and 100 patients of white British descent</td>
<td>Patients of South Asian origin had high specific concerns. General overview and the general harm scored high. Asian patients believed that drugs in general were more harmful than white participants. They were also more concerned about side effects.</td>
</tr>
<tr>
<td>Conroy [20]</td>
<td>Cross-sectional study</td>
<td>Not stated</td>
<td>Not stated</td>
<td>Not stated</td>
</tr>
<tr>
<td>Dhillon [20]</td>
<td>Face-to-face interviews using general health status [10] MFI screening tool and SHVS scale</td>
<td>Community pharmacy</td>
<td>49-83 years</td>
<td>Not stated</td>
</tr>
<tr>
<td>Debarshi [19]</td>
<td>Face-to-face interviews using MFI screening tool and SHVS scale</td>
<td>Community pharmacies</td>
<td>South Asian</td>
<td>Multiple reasons for non-adherence to regular monitoring or review.</td>
</tr>
<tr>
<td>Tung [22]</td>
<td>Descriptive survey</td>
<td>GP practices</td>
<td>White and Asian</td>
<td>Adverse effects, ADRs and adverse effects</td>
</tr>
</tbody>
</table>

ADRs: adverse drug reactions; AIVS: antiretroviral therapy system; CHT: centre-based therapy; SHVS: standardized health system; MFI: medication failure index; ADRs: adverse drug reactions; PHR: primary health record; MPR: medication-related problems; SHVS: satisfaction with information about medicines.
Ethnic minority groups have also been shown to have different experiences, needs, values and expectations of illness, prescribed treatment and medical care. In addition, language and communication barriers have been identified in the literature as a possible contributory factor to MRPs as well as affecting the use of health services. This is because some authors believed that lack of language skills may affect communication between ethnic minority patients and healthcare personnel. It is suggested that the inability to communicate in what is now the ethnic minorities' another tongue may lead to discrimination because of the lack of a common language, ethnic minorities may struggle to express themselves and to feel comfortable asking questions. Language difficulties can have a harmful effect upon the patient's ability to understand proposed treatments and remedies completely. They also prevent the physicians' attempts at obtaining valid medical history easily, which may present medical risks if a misunderstanding with obtaining medical history occurs.

Another factor identified in the literature as potentially causing MRPs included the difficulty in obtaining a suitable interpreter among friends or relatives, or relying primarily on relatives or interpreters which may lead to information being lost or changed. Religious influences and high expectations and negative perceptions and attitudes towards healthcare services and healthcare providers have also been identified across the studies as a potential cause of MRPs. Lack of knowledge of the healthcare services and how to use them is also a further possible contributing factor for MRPs that has been identified, for example, some ethnic minority patients have no knowledge of the pharmaceutical care role of pharmacists which may lead to lack of regular monitoring and review of their medicines. According to the literature, underestimating patients' desire for information, which may be a consequence of a lack of awareness of the extent of patients' decision-making regarding the use of their medicines and/or poor appreciation of their experience of MRPs may well cause MRPs.
Recommendations made to support ethnic minority patients in the use of medicines

Some recommendations were made across the studies to support patients in the use of medicines. The recommendations involved providing patient counseling and education programs about their disease, its management, and medicines and the service available, providing an interpreter for ethnic minorities who cannot speak English, using patient flashcards to provide information for illiterate people, providing bilingual link workers who explain reasons for regular appointments and provide encouragement and a cultural bridge between healthcare professionals and patients, increasing involvement of ethnic minorities in decisions about healthcare provision and utilities involving patients in evidence-informed decision making for safer and more effective disease and medicine management.

Further recommendations included not only improving provider-patient communication by understanding of cultural factors that inform their beliefs and practices but also ensuring that mechanisms are in place for the effective transfer of information, encouraging pharmacists and patients to work together and share their experiences regarding the use of medicines as well as exchanging information that will support patients achieving optimal outcomes from their medicines, encouraging effective reliable communication between secondary and primary care, surgery, pharmacies, and patients for the continuity of safe and effective therapy, providing enhanced pharmaceutical services in areas of health inequalities and to such minority groups.

Discussion

This review brings together the information in the current literature regarding medicine use and MRDs experienced by ethnic minority groups in the UK. Our findings suggest that there was variability seen in type(s) and possible cause(s) of MRDs identified across studies as well as recommendations made to support these groups in the use of medicines, which may be explained by differences in purpose of the study, ethnic group of participants, definition of a MRD, different disease condition, study setting, methodology used, and the duration of follow-up for problem identification. However, common issues such as access to care and cultural perspective arise across different ethnic minority groups.

Identifying studies and key words on MRDs experienced by ethnic minority populations in the UK were challenging. Thus, there is a possibility that some relevant studies were not included despite a thorough investigation. Secondly, to ensure a scientific evidence base this review includes only peer-reviewed journal articles. Thirdly, as discussed above, some of the studies included in this review were either small with numbers of ethnic minority participants (ranging from 17–44, with a median of 32 patients) or did not report the sample size (n = 3). The results are also limited by the short length of follow-up for problem identification. A further limitation is that different terms and definitions were used to describe MRDs among the selected studies. For example, some studies used a wide holistic definition to identify MRDs whereas others used a narrow definition such as ADR, ADE or adherence or used no universally accepted definition. Finally, this review focused on ethnic minority groups in the UK. Whilst some similarities and differences might be expected elsewhere, the extent to which findings are relevant to population groups in other countries, societies, settings and contexts is unclear.

There has been no holistic approach or systematic investigation of MRDs among ethnic minorities in the UK. This review highlights that ethnic minority patients have their own problems and needs with both medicine use and service access and also that some ethnic minority groups may be at higher risk of MRDs than the majority ethnic group. This is possibly because ethnic minority patients may experience more difficulties in accessing healthcare services, getting the correct diagnosis and medicine being supported with the use of medicines and getting regular monitoring or review. The full body of evidence on the extent to which ethnic minorities have more or less MRDs than the majority ethnic group is lacking. However, we can anticipate that ethnic minorities have their own perspectives and needs because of cultural and religious issues, language and communication barriers, previous experiences and different expectations. Recommendations made in the literature to support ethnic minorities in the effective use of medicines have not been evaluated. The recommendations need to be addressed for all stages including diagnosis of disease, safe and effective use of medicines, monitoring or review of their chronic disease and medication regimens.

Differences in the use of medicines would be expected between different ethnic minority groups. However, this review clearly shows that articles on medicine use and MRDs experienced by ethnic minorities in the UK are limited in number. As a consequence, it is not possible to separately identify MRDs from the perspective of each ethnic minority group. Little evidence is known of what influences MRDs among ethnic minorities, despite the diversifying world in terms of ethnic makeup and expanding field of research in use of medicines. Therefore, there is a need for more studies that examine medicine-related needs for ethnic minority groups to ensure we effectively serve the requirements of all populations and that all groups are supported in their use of medicines.
Conclusion
There has been no holistic approach or systematic investigation of MNEs among ethnic minorities in the UK. However, this review highlights that ethnic minority patients have their own problems and needs with both medicine-use and service access. Therefore, there is a need for further research to be done in this area and for these patient groups.

Implications for further research
The findings from this review have wide-ranging and important implications for the research community in the UK and beyond. For instance, researchers should include ethnic minority groups more in health research, and the research should be designed to identify and address the needs and perspectives of ethnic minority groups. Researchers should also ensure that ethnic minority groups fully understand what taking part involves, for example by generating translated materials and using interpreters when needed. Further research should be a priority internationally. Whilst many problems and solutions may be context specific, issues such as access to care and differing cultural perspectives, which are common among ethnic minority groups in the UK, may occur among ethnic minority groups living in other countries.

Declarations

Conflict of interest
The Author(s) declare(s) that they have no conflicts of interest to disclose.

Funding
This is a privately funded PhD study.

References
22. Lip G et al. Ethnic differences in patients perceptions of heart failure and treatment the West Birmingham
Key factors found to affect pharmacists’ job satisfaction were seen in organisational type and ethics. Pharmacists working in large supermarkets were more likely to have advanced services yet had the lowest levels of job satisfaction when compared with other community organisation types, suggesting that smaller and advanced services can also be utilized to improve the overall satisfaction of pharmacists. In light of recent evidence, it seems reasonable to suggest that reduced job satisfaction could be related to B2B pharmacies experiencing uneven payment and discrimination in the workplace. Further research focusing on reasons why B2B pharmacies have lower job satisfaction than White pharmacies is necessary.

Current employer strategies for preventing or managing workplace stress in English community pharmacies

S. Jacobs, K. Hossell and S. Johnson

University of Manchester

In community pharmacy, increasing dispensing volumes and role expansion are leaving pharmacists struggling to cope in the face of stringent business targets and reduced staffing levels.1-8 Many perceive an increased risk of dispensing errors being made. How community pharmacies support the well-being and mental health of their staff has been under scrutiny for patient safety and is further complicated. Despite a focus on developing organisational strategies to prevent chronic stress and dispensing errors, effective organisational solutions to workplace stress in community pharmacy have not been identified. This study aimed to identify existing strategies being used by employers to prevent and manage workplace stress in English community pharmacy, and to explore any opportunities and barriers to their implementation. This study was approved by the University of Manchester Research Ethics Committee.

Semi-structured telephone interviews, lasting between 30 and 90 minutes, were conducted between January and March 2011 with 20 purposively selected community pharmacist second-hand recruit managers from 13 of the 15 community pharmacy employing organisations identified through existing networks of the research team. The topic guides developed from the literature, included questions about existing organisational strategies for stress management/psychosocial well-being and opportunities and barriers to their further development. To help protect the participant, a briefing paper summarising existing evidence of effective stress management interventions was sent to participants in advance. Interviews were audio-recorded, transcribed verbatim and analysed thematically using NVIVO. Applying a widely-used theoretical framework, existing stress prevention/management strategies were categorised as forming either on (i) the individual employee, (ii) the interface between employee and organisational task, or (iii) for organisational level. Return to work schemes, counseling services, and health lines were the most frequently mentioned existing strategies which were spread across individual pharmacists. Some detailed in the employee-organisation interface included: approach, communication strategies, management support, conflict resolution, management training, and encouraging autonomy and participation. Ensuring there was a supportive organisational culture, encouraging self-breaks, appropriate staffing levels and mix, and improving the physical and financial environment and equipment, were among the existing organisational level strategies most often described. The most commonly cited barriers to implementation included pharmacists’ difficulties with delegation, financial constraints, the role of middle managers, and pharmacists’ reluctance to seek help. The most commonly cited facilitators included management training in management skills, the role of human resources and support management support and evidence of the scale of the problem and the potential for cost savings.

This is the first daily to examine stress management strategies in English community pharmacy organisations. The findings suggest that pharmacists appear to be using a wide range of strategies to prevent or manage workplace stress, together with increasing insights into what might improve their implementation. However, its qualitative methodology precludes making generalisations at this stage and there is a slight risk that the briefing paper may influence interviewer responses. Moreover, the success of these strategies cannot be determined here, Together with further analysis of these interviews and others conducted with pharmacist interns, those findings will help to identify and develop the most promising stress prevention/management strategies for evaluation in community pharmacy organisations.

Medication use and medicine-related problems (MRPs) in South Asian and Middle Eastern patients with chronic diseases in the UK

F. Alhomoud,9, F. Smith,7, Z. Aslanpoe2 and A. Dhillion

University of London and University of Wolverhampton

Minority ethnic groups (MEGs), including South Asian (SA) and Middle Eastern (ME) groups, often have a higher prevalence of chronic diseases. These disorders can be compounded by multiple drug therapies and consequently MRPs.9-11
EMMs may experience language barriers, distance-based differences, and reimbursement issues. Studies suggest that patients' experience with health care providers can affect their medication adherence. Studies have shown that patients with comorbidities may have lower medication adherence due to multiple health issues and side effects. A systematic review examined the adherence of patients to chronic medications and found that the mean adherence was 85%. The review identified several factors affecting adherence, including patient-related factors such as age, gender, education, and health literacy, as well as system-related factors such as medication complexity and access to medications.

Systematic review of pharmacist-led medication review in chronic pain management: preliminary findings

M.A. Hadji, D.P. Alfred, S.J. Oles and M. Briggs
University of Leeds

Chronic pain is a common problem affecting more than half of the UK’s adult population. Pharmacists can play a vital role in chronic pain management by ensuring the safe and effective use of medications. The aim of this systematic review was to evaluate the effectiveness of pharmacist-led medication reviews for chronic pain management among adult patients.

Methods: A systematic review of pharmacist-led medication reviews was conducted. Search terms included medication reviews, chronic pain, and pharmacists. Studies were included if they were conducted in the UK and involved pharmacist-led medication reviews. A total of 11 studies were included in the review. The studies were of varying quality, and the methods used were not standardized. The findings indicated that pharmacist-led medication reviews can improve patient adherence, reduce medication errors, and improve pain management. However, more research is needed to determine the long-term impact of pharmacist-led medication reviews on chronic pain management.

References


Disclosure of Interest: None Declared.

CP-FC17
Gastroprotection for ns-NSAID users at risk by community pharmacists
M. Teichmuller1,2, F. Grün1, B. Buja3, M. Wensing1, P. D. Smets1,3

Background and Objective: For users of non-selective nonsteroidal anti-inflammatory drugs (ns-NSAIDs) at increased risk of upper gastrointestinal (UGI) complications, gastroprotective agents (GPAs) are recommended. We evaluated the effectiveness of pharmacists’ interventions participating in a program to increase gastroprotection in ns-NSAID users at risk in comparison to controls from remaining Dutch community pharmacists.

Setting and Method: In a comparative cohort study participating community pharmacists were reported their ns-NSAID users of 60 years and above at risk for UGI damage. Participating pharmacists intervened to increase safe drug use in consultation with General Practitioners during 3 months in a selected Intervention Group (IG) by adding GPAs to ns-NSAIDs or ceasing ns-NSAIDs.

Main outcome measures: By nationally collected dispensing data after 3 months the number of ns-NSAID use from the selected IG was compared to a control group (CG) from remaining Dutch community pharmacies of ns-NSAID users at risk at baseline by multivariate logistic regression.

Results: At baseline in all ns-NSAID users at UGI risk concurrent gastroprotective medication was detected in 86 %. The effect of an intervention to 408 selected ns-NSAID users at risk in 79 participating pharmacies was compared with 256 subjects in 1,672 remaining pharmacies at follow-up. From ns-NSAID users with baseline risk, persistent ns-NSAID users above: 70 years in the IG had an additional 7 % chance on gastro-protection (OR 0.93, 95 % CI 0.89-0.98) compared to the CG at follow-up.

Conclusion: Although the percentage of concurrent gastroprotection in susceptible ns-NSAID users in the Netherlands is already high, still substantial numbers of patients remained at risk for serious upper gastrointestinal side effects. Pharmacists led interventions could substantially improve safe use of ns-NSAIDs.

Disclosure of Interest: None Declared.

CP-FC18
Anti-NMDA receptor encephalitis: Pharmaco-surgical care and clinical follow-up in pediatrics
H. De Blander1, L. Faehndrich, R. Clément, M. Pastoureau, P. Bourget
1Department of Clinical Hospital, Hôpital Necker-Enfants Malades, Paris, France

Background and Objective: Anti-NMDA receptor encephalitis is an autoimmune neuropsychiatric disease characterized in 2005. No specific clinical tools are currently available to assess the efficacy of immunomodulatory treatment among pediatric population. The main objective was to develop an assessment grid and evaluate tolerance and efficacy of the treatment.

Setting and Method: In this study we retrospectively report pharmacological care and symptomatic evolution of all the patients admitted to our hospital between May 2010 and March 2013. We evaluated cut-off treatment efficacy and safety at 6 months and 1 year.

Main outcomes measures: We developed an assessment grid adapted to the evaluation of children’s behaviour, language, motoricity, affinities, contact, automatic movements disorders and memory. Each of these characteristics is rated on a scale from 0 (normal) to 3 (greatest).

Results: Eight patients aged 3 to 15 years old, 6 girls and 2 boys were evaluated. All of them were observed 6 and 12 months after the beginning of their follow-up. Eight patients received 1st line treatment with intravenous corticosteroids (intravenous methylprednisolone) in a bolus at 30 mg/kg/day during 3 days and subsequently per os and immunoglobulin at 1 g/kg/day for 2 days. Six patients received rituximab at a 375 mg/m² intravenous infusion once weekly for 4 weeks. Subsequent improvement led to administration of azathioprine started from 1 mg/kg/day. Immunoglobulins were well tolerated and no hypersensitiveness occurred; rituximab caused one case of self-limiting hypersensitivity reaction with stopping infusion. One patient developed hypoglycaemic hypoglycaemia secondary to septic shock 3 days after his last rituximab infusion. Clinical course was favourable after 6 months and 1 year for 6 of 8 patients. Switching to azathioprine in 3rd line led to an improvement and healing in one patient and another still remains on treatment to date.

Conclusion: Duration of time before rituximab treatment was often variable, depending on clinician and patient’s condition because of the absence of evidenced-based formal guidelines. Evaluating the impracticability of a clinical benefit to immunomodulatory treatments remains difficult because of co-prescriptions frequently associated. With the support of a new assessment grid adapted to pediatric population, we further highlighted the efficacy of treatment in children.

Disclosure of Interest: None Declared.
Main outcome measures: Identification of 5MRs from the SA and MB patients' perspectives.

Results: Participants (51% male) had mean (SD) age 58 (13.4) years and on a mean (SD) of 8 (4) medicines. Final analysis showed the following types of MRs that influenced adherence and informed decision making among participants: adverse drug reactions and drug interactions; intentional non-compliance; cognitive, physical and emotional problems and issues with concurrent use of herbal and alternative therapies. Problems with drug prescribing; lack of information; monitoring and review; repeat prescriptions; GP surgery and pharmacy service were also identified. Many problems are common in other groups, however, possible explanatory factors discussed how the cultural and religious beliefs, previous experiences, different expectations and needs, different perceptions and actions regarding the use of medicines, language and communication barriers, poor supervision, lack of knowledge or understanding about use of medicines and healthcare services and underestimating patients' desire for information may contribute to the problems.

Conclusions: This study demonstrated that SA and MB patients have their own problems and needs with both medicine use and service access. It also highlighted the crucial role that patients play in the management of their own illnesses. By uncovering particular problems experienced by these groups, the study can inform healthcare professionals, who may have differing views about the appropriate use of medicines, to support SA and MB patients in their use of their medicines and to work with other healthcare professionals to improve access to healthcare services.

Disclosure of Interest: None Declared.

CP-PC21

Identification of error rate in using inhalation devices by asthmatic patients

D. Masankowska1, J. Mendoza2, J. Šahová3

1Department of Social Pharmacy, Faculty of Pharmacy, University of Veterinary and Pharmaceutical Sciences Brno, Brno, Czech Republic

Background and Objective: Asthma is a common chronic disease worldwide and affects approximately 300 million persons in the world. Epidemiological studies have shown that almost 80% of patients do not have their asthma under control. Therefore, achieving and maintaining asthma control is the major goal of asthma care. Inhalated therapy requires the preferred treatment for patients with asthma and chronic obstructive pulmonary disease (COPD). The aim of this study was to evaluate the error rate in using inhalation devices (ID), and to define type of errors (steps) in each ID during the process of inhalation technique.

Setting and Method: This study had a cross-sectional design and involved a group of 200 asthmatic patients from the Department of Allergology, The University Hospital Brno. Patients were consecutively recruited during their regular visits to the outpatient department, from September 2010 to January 2011. Male and female asthma patients aged 14 to 80 years were eligible for inclusion in the study if they met all of the following criteria: 1) diagnosis of asthma for at least 1 year (10598), 2) with inhaled therapy for at least 6 months before starting the study; 3) they were ready to fill in questionnaire. Following variables of participants were reviewed: sex, age, year of treatment, frequency of breath difficulties, classification of asthma according to level of control, ID used, former rate in using ID was assessed by patients using a questionnaire for each of ID, including all necessary steps for performing correct inhalation technique.

Main outcome measures: We analyzed the percentage of patients with correct and incorrect use of ID, the percentage of errors in assessed ID (Metered Dose Inhaler (MDI), Easy-breath Inhaler, Diskus, Turbuhaler, Respimat, Aerolizer), error rate for each ID separately, generally error rate for all ID, and error rate in concrete steps during the process of inhalation technique.

© Springer