

**The impact of a needs-based educational programme  
on General Practitioners' confidence and skill in  
managing common musculoskeletal problems**

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## **Author's declaration**

I, Mir Inamul Haq, confirm that the work presented in this thesis is my own.

Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

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## **Abstract**

Disorders of the musculoskeletal (MSK) system are prevalent in the UK. They are a significant cause of pain, disability and health and social care resource utilisation. Most patients with MSK disorders are seen and treated by General Practitioners (GPs). MSK disorders form up to 20% of GP consultations and the majority are formed of a small number of conditions such as back, neck, and knee pain. Despite the prevalence of these conditions, there is evidence that management of affected patients is suboptimal.

This thesis investigated the possibility and feasibility of improving GP delivery of care to patients with MSK problems using an evidence-based educational intervention. The study population was a cohort of GPs from Camden and Islington Primary Care Trusts. The first phase of the project was a needs assessment case study of prior training and CME experience in MSK disorders using questionnaires and face-to-face interviews. The second phase used these results to develop, deliver and evaluate an MSK training course.

The principal findings from the needs assessment were that formal postgraduate training in MSK disorders was rare. CME events were mainly in the form of lectures. GPs rated the need for knowledge of MSK disorders in primary care as high. The MSK training course was based on the needs assessment, taking place in small groups, using trained patients (Patient Partners) and clinical cases. GPs evaluated the course as highly relevant to their needs, leading to increased confidence and skills. However, GPs estimated that confidence would reduce after 6 months without further training. It is feasible to deliver a research informed training course for GPs on MSK disorders. Further work needs to be done to find effective strategies to produce prolonged changes in behaviour and practice that deliver effective patient care.

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# **Chapter 1: Introduction and background**

## **1.1 Introduction**

This thesis focuses on the delivery of care to patients with musculoskeletal (MSK) disorders by General Practitioners (GPs). Through better understanding of the educational journey taken by GPs in learning to manage patients with MSK disorders, we will be better placed to develop effective educational interventions to ensure that GPs continue to be equipped to deal with common MSK disorders. A question that is often asked is why knowledge of MSK disorders is important when compared to other diseases such as heart disease, mental health and cancer. This chapter will explain how significant an impact musculoskeletal disease has on the individual and society, and why this is relevant to doctors in general practice. The history of the development and structure of general practice will help to put into context the current healthcare drivers (both political and health economic) to provide more care for chronic diseases in the community, and how MSK disorders have, and continue to suffer from inadequate allocation of healthcare resources. The aim of this chapter is to highlight the importance of MSK disorders, explain how the burden of care for the vast majority of sufferers falls to community health professionals, and illustrate some national/international strategies aimed at improving care of these patients. From this I will argue it is vital that GPs are able to develop and maintain the appropriate knowledge and skills to manage patients with MSK disorders effectively. This chapter will then summarise and discuss educational

theories that underpin adult learning and how these theories inform the development and delivery of a needs-based education programme in the management of common MSK disorders in a group of north London GPs. But first it is important to understand the structure and functions of the normal MSK system

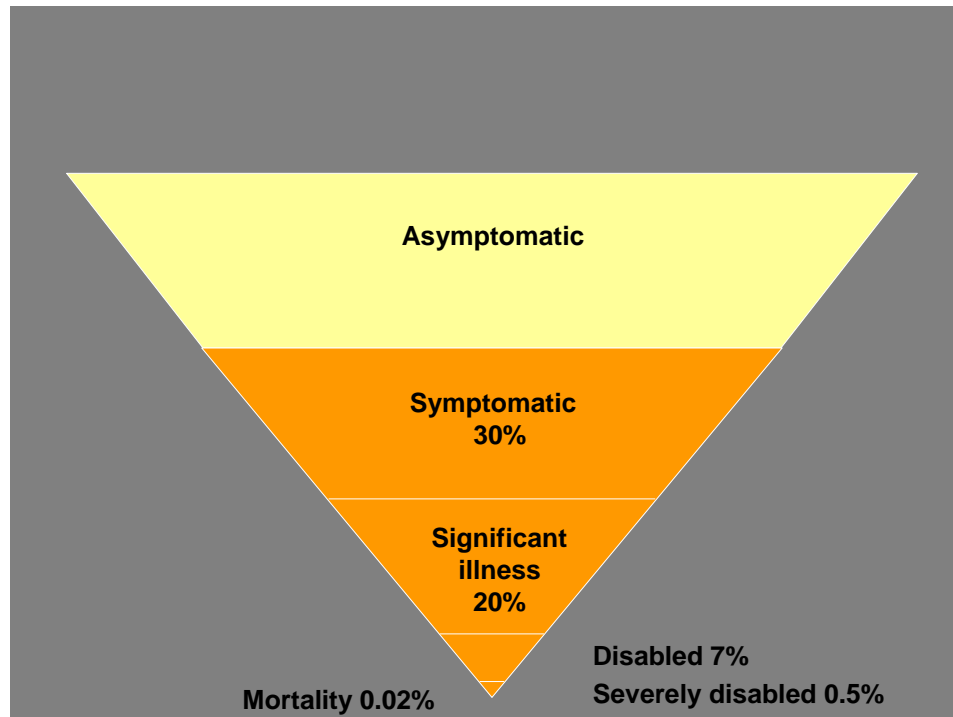
## **1.2 The Musculoskeletal system**

The MSK system comprises different tissues (bones, joints, muscles, tendons, cartilage and other connective tissues) that work in harmony to fulfil several important functions. Disorders of this system are the most common cause of severe long term pain and disability, affecting people worldwide. The prevalence of musculoskeletal problems increases with age and is influenced by lifestyle factors such as obesity. The increasing number of older people with sedentary lifestyles will lead to an increased burden on society (Woolf, 2001). The United Nations and the World Health Organisation have become aware of this and launched the Bone and Joint Decade (BJD) in 2000. Its aims are to: increase awareness of the impact of MSK conditions on society; to empower patients to manage and prevent MSK disease through education; to increase research; and to improve diagnosis and treatment of patients (Bone and Joint Decade, 2008). These aims are pertinent to this project and primary care. Woolf et al (2004) emphasise the need to improve MSK education in medical schools, so providing the next generation of doctors with the appropriate skills to recognize and manage MSK disease, regardless of their eventual specialty of practice. This strategy is laudable to help improve knowledge and primary care skills and

knowledge for the future, but there is no specific mention of a similar strategy for established GPs, who may have had variable training in their under- and postgraduate careers. Using these approaches, the BJD hopes to reduce the number of fractures secondary to osteoporosis; the progression of joint diseases; the numbers of disabled patients and the costs of social and welfare care arising from MSK disorders by keeping patients active and in employment.

### **1.3 Importance of musculoskeletal disability in primary care**

Bone, joint and muscle problems are the second most common reason for consulting a doctor in most countries, and constitute 10-20% of primary care consultations (Rasker, 1995 and McCormick, Fleming and Charlton, 1995). In Canada, musculoskeletal complaints made up 20% of all health care costs (Badley et al, 1994). In the UK in 2003, MSK conditions the third most frequent reason for GP consultation, with an estimated cost of £1340 million for the consultations alone (Health Protection Agency, 2005). In the UK General Household survey (HMSO, 1995), the prevalence of self-reported musculoskeletal pain was estimated at 159 per 1000 adult women and 143 per 1000 adult men, both significant if even only some of these people seek medical help. A study by Badley (1992) estimated the prevalence of MSK disorders resulting in increasing levels of disability, summarised in figure 1.1. According to Badley, 30% of adults have MSK symptoms, 20% have significant disability, 7% have some restriction in daily activity, a small proportion (0.5%) are so disabled they require help with activities of daily living, and mortality is very low at 0.02%.



**Figure 1.1: The disability pyramid (Badley, 1992)**

In Manchester in the UK, a primary care survey of musculoskeletal symptoms showed that the most common sites were the back, knee and shoulder pain in 23%, 19% and 16% of responders respectively, with pain at one site predicting pain in other areas (Urwin, Symmons, Allison et al, 1998). This group also found that areas with significant social deprivation had a high prevalence of self-reported MSK symptoms, which has an important bearing on any subsequent planning for provision of healthcare resources. Musculoskeletal disorders are the second most common cause of short term sickness in developed countries and are the most common cause of long term sickness (Woolf, 2003). At least 50% of all work-related ill-health has an MSK cause (Black, 2008). From these

data it can be seen that MSK disorders cause significant morbidity, but mortality is low.

Changing population demographics will have a significant effect on the prevalence of MSK conditions. UK data from the Statistics Authority showed that in 2007, the proportion of the population at or over the official pension age was larger than the proportion under the age of 16 years for the first time. Due to improvements in life expectancy, the fastest growing sector of the population is in those aged 80 years-old or over. By 2050, it is estimated that those over 65 years of age will comprise 25% of the UK population (UK Statistics Authority, 2007). The World Health Organisation states that there will be 2 billion people over the age of 60 worldwide by 2050 (World Health Organisation, 2008). Joint disease affects over 50% of those over 65 (Bone and Joint Decade, 1998), and in terms of years lived with disability, osteoarthritis is ranked 8<sup>th</sup> in men and 4<sup>th</sup> in women worldwide (Murray and Lopez, 1997). Sixty percent of those over the age of 65 have moderate or severe OA in at least one joint (Lawrence et al, 1966). The knee is the main large joint affected, and results in significant pain and disability in 10% patients over 55 years old (Peat et al, 2001). The number of people with symptomatic OA is rising as the population ages and is associated with the increasing prevalence of obesity (Haq, Murphy and Dacre, 2003; European Commission, 2008).

### **1.3.1 Demographic factors in Camden and Islington**

The Townsend index of material social deprivation is used commonly in health services research. The more positive the value the more social deprivation is present. Data from 1998 showed positive Townsend Indices of 10 and 12 for London Boroughs of Camden and Islington respectively (Barking, Havering and Dagenham Public Health, 2001). To put this into context, the highest index was for Tower Hamlets borough (14.6) and lowest for Bromley borough (-1.6).

Therefore there is significant material deprivation in the boroughs in which the project is taking place, and extrapolating from the work of Unwin et al, a higher prevalence of musculoskeletal symptoms would be expected, placing a greater burden on healthcare providers.

Interestingly, the boroughs of Camden and Islington have lower numbers of people over the age of 65 (9% compared with the England average of 15%). 72% of the population is between 25-49 years old compared with the England average of 61% (Camden Primary Care Trust, 2009 and Islington Primary Care Trust, 2009). Public health data on the prevalence of ischaemic heart disease, mental health problems and diabetes are recorded, but no information is collected routinely on MSK disorders or disability, making exact prevalence calculations difficult. Islington PCT estimates the age-adjusted prevalence of self-reported long-term illness at 23%, some of which will be accounted for by MSK problems. Therefore the burden of MSK symptoms and disability needs to be extrapolated from national and local data. This may mean that the overall



burden of MSK disorders in Camden and Islington may be lower than expected due to the age make-up of the local population, but other factors such as social deprivation and self-reported long-term illness will increase the prevalence of symptoms. The estimates may also be under-representations as those in hard to reach groups may be less likely to respond to health surveys (Urwin, Symmons, Allison et al, 1998). Over the next 20 years as the population ages, a significant increase in MSK symptoms would be expected. On a national and local basis, GPs therefore need to be aware of the best way to manage common bone, joint and muscle problems.

#### **1.4 GP education in management of MSK disorders**

For a significant proportion of GPs in established practice who qualified in the 1970s and 1980s, undergraduate education in MSK disorders has been inadequate, with little allocated time in the curriculum and failure to assess the relevant clinical skills (Jones, Maddison and Doherty, 1992). The situation improved in the 1990s with the development of the GALS screen (Doherty, Dacre, Snaith and Dieppe, 1992) and provision of dedicated teaching and assessment in MSK disorders in the undergraduate curriculum.

Unfortunately, for those who qualified prior to these improvements, postgraduate education was no better, despite the introduction of mandatory vocational training in general practice in 1981. Booth (1990) criticised the low number of training programmes (10%) containing orthopaedics. It can be argued that hospital orthopaedic practice may not equip GPs with the necessary skills to manage problems in the community, but at least trainees with orthopaedic

experience would have learned to examine joints. Hull (1991) described the paucity of specific rheumatology experience in North London vocational training schemes. On a national level, Lanyon et al (1995) showed that only 43% GP trainees were getting rheumatology experience via day-release courses, 35% had received no tutorials on rheumatology from their trainer, neither of which is a match for day-to-day experience in real clinical practice. Renner (1990), in a study of US family physicians, found that access to rheumatology learning during postgraduate training was less than those available to internal medicine residents. It stands to reason therefore that poor education in the under- and postgraduate arenas could lead to lack of satisfaction and confidence in management of MSK disorders once in established GP practice

## **1.5 Management of MSK disorders in primary care**

Evidence from the literature suggests that there have been some areas of sub-optimal practice in relation to MSK disorders in primary care. These have been due to: accuracy of diagnosis (Bolumar et al, 1994); differences in ordering of laboratory tests (van der Weijden et al, 2002); overuse of non-steroidal anti-inflammatory drugs (NSAIDs) (Bellamy et al, 1998); and delay in referral (Kidd and Cawley, 1988). In Canada, primary care management of standardised patients with shoulder pain, osteoarthritis of the knee and an acute hot swollen knee were broadly within recommended practice, but NSAIDs were over-prescribed and use of patient-centred therapies such as exercise was low (Glazier et al, 1998).

Data on GP and patient assessment of management of MSK disorders is conflicting. Interviews with patients and GPs regarding treatment and management of musculoskeletal pain showed primary care physicians felt musculoskeletal pain was well managed, with all patients offered some kind of treatment. From the patient's perspective, they felt that communication with doctors was poor, information on their condition was lacking, and they were unlikely to participate actively in their treatment in an informed manner (Woolf et al, 2004). These issues will be discussed further using the examples of osteoarthritis (OA) and back pain.

Patient satisfaction with diagnosis and management of their OA is variable in the UK. A report by the charity Arthritis Care (2004) stated that 40% of patients questioned who had OA had seen their GP between 3-11 times before being given a diagnosis, which could be up to 18 months after symptoms first appeared. In the community, physiotherapy is under-utilized in patients with knee OA, with only 13.1% of patients having received either hospital- or GP-based physiotherapy. There is a high prevalence of non-steroidal anti-inflammatory drug use (Jordan et al, 2004, Crichton and Green, 2002). NSAIDs are prescribed widely, with up to 1 in 10 of the population of Western countries receiving them for arthritis (Emery, 1996; Antonov and Isacson, 1998). NSAID use increases with age and they have significant adverse effects on the gastrointestinal tract and kidneys (Blower et al, 1997; Hernandez-Diaz and Rodriguez, 2000).

In contrast to Woolf's findings, other studies have shown low satisfaction levels in management of MSK disorders. GP and patient satisfaction with management

of back pain is low, with up to one-third of GPs not giving advice about back exercises, fitness or everyday activities (Little et al, 1996). Optimal management of low back pain needs to take patients' complex views of the condition into account. Lack of up-to-date knowledge of management of back pain has also been raised as an issue by patients (Layzell, 2001). Improved GP communication skills may improve management of low back pain by addressing patients' individual needs and concerns (Schers et al, 2001). Agreement between primary care physician and patient on diagnosis and management plan led to greater patient satisfaction and functional health status (Staiger et al, 2005).

The majority of MSK disorders have no “diagnostic test”, and many conditions are self-limiting or present with non-specific symptoms and signs. This can lead to diagnostic uncertainty and the inappropriate use of investigations to reach a diagnosis. Tests may also be requested but the result does not influence the intended management by the requesting health professional, adding to health resource utilisation. Many tests have a significant false positive rate, which can lead to further unnecessary investigations or treatments, and inappropriate medicalisation of the patient. It would seem right to produce guidelines to help GPs order appropriate tests at the right time, but Dutch studies have shown that this does not lead to a change in use of blood tests in actual primary care practice (van der Weijden et al, 2002). The same group looked at reasons for this found a complex interaction between GP traits (confidence in tolerating diagnostic uncertainty, practice of defensive medicine), time pressures, lack of understanding of utility of tests and the relationship with the patient. From my

personal experience of working with GPs, the same issues have arisen in informal discussions around the use and interpretation of autoantibody tests (rheumatoid factor and antinuclear antibodies) and inflammatory markers (erythrocyte sedimentation rate and C-reactive protein). Despite the presence of many guidelines, further work needs to be done to help GPs be more confident in the role of blood tests in diagnosis and treatment in general, and this can be extrapolated to MSK complaints.

### **1.5.1 Patient education**

GPs have an important role to play in patient education, both directly and by increasing patient access to multidisciplinary services and self-management groups. A self-management program in patients with acute low back pain improved and maintained functional status, mental functioning, and self-efficacy to manage future symptoms for 1 year among primary care patients (Damush et al, 2003). Use of the validated Arthritis Self-Management Programme (ASMP) (Barlow, Turner and Wright, 1998) in primary care patients with osteoarthritis and rheumatoid arthritis resulted in benefits in pain reduction, psychological wellbeing and perceived ability to manage their arthritis up to 12 months after the intervention. The ASMP covers pain and fatigue management, problem-solving, maximizing good quality sleep, appropriate use of medication, making informed treatment decisions and effective communication with family, friends and health professionals. In interviews of patients with arthritis, greater knowledge of their disease was helpful in providing practical advice and reassurance (Dacre , 2002).Despite their potential benefits, education

programmes have been reported to be not cost-effective (Segal et al, 2004), to provide only modest benefits in pain, disability and depression compared to no treatment (Riemsma et al, 2002). In the current medical climate of patient-centred care, it is good practice to discuss information openly regarding treatment options and prognosis with patients (Jones, 2002). A logical next step in “closing the loop” in the patient education process would be to involve patients directly in teaching health professionals including GPs. A better understanding of the patient viewpoint can lead to a more effective partnership between doctor and patient and higher levels of patient satisfaction, a reduced symptom burden and fewer referrals to specialist care (Lorig et al, 1999)/ The use of such “Patient Partners” has been used successfully in undergraduate education in the context of MSK and other disorders, but has not been explored as part of CME for GPs. An innovative programme using PPs with back pain will be described in chapters 5 and 6.

This section has highlighted the importance of knowledge of management of MSK disorders in primary care, and the difficulties that are encountered currently by GPs and patients. If under- and postgraduate training has been suboptimal, it is vital that education once in established practice can fill the gaps in earlier training via Continuing Medical Education.

## 1.6 Continuing medical education (CME) in MSK disorders

CME is defined as:

“A process of lifelong learning for all individuals and teams which enables professionals to expand and fulfil their potential and which also meets the needs of patients and delivers the health and healthcare priorities of the NHS.”

**(Department of Health, 1998)**

CME would seem to be vital in keeping health professionals' knowledge and skills up-to-date. Despite changes in educational theory and practice, and the increasing awareness of the impact of MSK disease, the reality is that group lectures form the basis on primary care CME activities in rheumatology, led by hospital specialists, are based on what is seen in secondary care rather than what is seen in the community (Badley and Lee, 1987). It is clear that this approach is not effective in facilitating changes in knowledge and behaviour (Hull, 1991). The factors increasing the effectiveness of CME interventions have been known for several years, with investigators reaching the same conclusions and calling for a change in approach (Davis et al, 1995; Cantillon and Jones, 1999; Smits et al, 2003; Glazier et al, 1995). Yet despite this evidence, didactic lecture-based CME is prevalent. There may be several factors behind this: Firstly, it is much easier to run a large group lecture than develop and deliver small-group training sessions. Increasing time pressure from teachers and learners reduces the availability to attend longer training courses. There is no doubt that active participation has a positive effect on effecting a change in behaviour (Davis et al, 1992 and Davis et al, 1995), but a wide variation in methodologies and outcome measures have made it difficult to compare studies.

A pilot project under the aegis of the London Implementation Zone Education Initiative (LIZEI) studied the impact of a short workshop in MSK disorders for inner city London GPs. The course led to an immediate increase in knowledge and skills after the course, but no specific needs assessment or long-term follow-up was performed (McLure, McGowan and Dacre, 1998). This project was local and elements of its content and deliver could be transferred to a further training course, with an emphasis on the learning needs of the local GPs. A needs assessment forms the first part of the thesis and is described in chapters 3 and 4. The effect of an educational initiative is dependent on other contextual factors that can limit the transferability of an educational approach used in another setting. A contextual factor that is important to understand in the UK is the ever-changing interface between primary and secondary care in management of MSK disorders.

### **1.7 The changing interface between primary and secondary care in management of MSK disorders**

Until recently, the system for managing patients with most MSK disorders was weighted towards referral to hospital for a specialist opinion. As we saw in the previous section, the common MSK disorders such as spine and soft tissue problems do not need to be treated in hospital. Faster and more patient-oriented care could be provided in the community. Several strategies have been used to evolve this concept with regards to MSK disorders, and they will be described briefly. Despite these interventions, it is only since 2007/8 that health service resources are being directed towards community care for MSK disorders.



### **1.7.1 The GP contract**

Introduced in 2004, the new contract provided significant new investment into primary care in order to improve services. GPs were paid for providing core and enhanced services, such as cervical screening, minor surgery and vaccinations (Department of Health, 2004). Unfortunately, musculoskeletal services were not designated as enhanced. In some this could potentially lead to less emphasis on care of patients with MSK disease.

Practice-Based Commissioning (PBC) allowed local GP practices to better address the needs of their population by commissioning appropriate services from primary and secondary care providers using an indicative budget given by the Primary Care Trust (Department of Health, 2006a). This strategy could benefit MSK patients in areas where their needs formed a large part of the population need, but in other areas where they form a minority, care may be less well defined.

The Quality Outcomes Framework (QOF), introduced as part of the contract, rewarded GP practices for developing disease registers and managing patients with specific conditions to set standards (Department of Health, 2006b). The conditions set out in QOF included cardiovascular disease, respiratory disease, epilepsy and diabetes mellitus, but MSK disease was conspicuous by its absence.

### **1.7.2 National Service Frameworks (NSFs)**

NSFs are described by the Department of Health as:

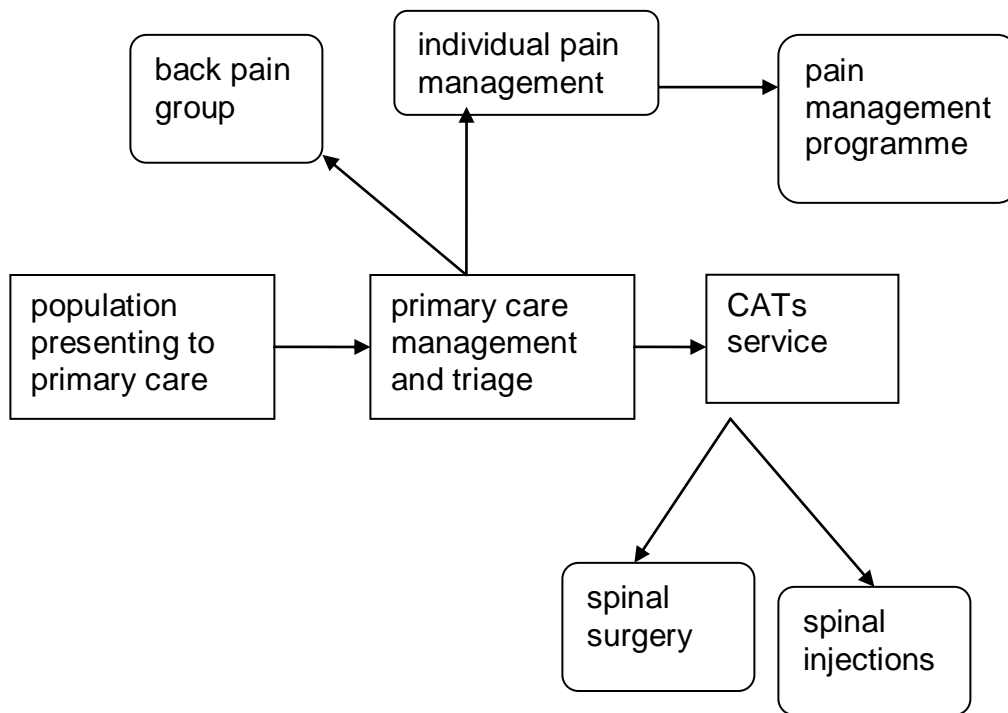
“...long term strategies for improving specific areas of care. They set national standards, identify key interventions and put in place agreed time scales for implementation.” (Department of Health, 2002)

Specific NSFs exist for conditions such as cancer, cardiovascular disease, diabetes and mental health. An NSF for MSK disease was not commissioned, although it is mentioned in the NSF for patients with long-term conditions. This NSF developed a multi-level approach, using self-care and links with health professionals in primary and secondary care to deliver a seamless service. Although this was a start, UK groups such as Arthritis Care and the British Society for Rheumatology felt that a more specific framework was needed to address the needs of people with MSK disease. The lack of NSFs and quality indicators in primary care to drive improvements in care and treatment of patients with MSK disorders led to the development of the Musculoskeletal Services Framework.

### **1.7.3 Musculoskeletal services framework (MSF)**

The MSF (Department of Health, 2006c) advocates the a pathway to providing best practice in service delivery by promoting the use the skillbase of all health professionals and an integrated approach to patient care, using Clinical Assessment and Treatment Services (CATs). CATs will provide an expert multidisciplinary opinion for patients at the interface between primary and secondary care, with the ability to organise investigation, treatment and referral

as appropriate to hospital or other services. By definition, this would reduce the number of patients needing referral to a hospital specialist, with the majority of patients being managed in the community by GPs and the multidisciplinary team. For this model to succeed, there needs to be agreement of guidelines and protocols between stakeholders and initial and ongoing training for GPs and other team members. An example of a CATS service for back pain is shown in figure 1.2



**Figure 1.2: A multi-disciplinary model for treatment of back pain using CATs (Department of health, 2006c)**

#### **1.7.4 The NHS Next Stage Review**

Of all the policies and strategies outlined above, the Next Stage Review has had the most impact in facilitating change in services for MSK conditions in the community as they are mentioned explicitly (Department of Health, 2008). This document further develops the government's plans to improve community services. At its heart is the need for better patient-focused care and improvements in quality of care. This will be achieved in several ways: a focus on well-being and disease prevention; a drive to return people to work; increasing patient choice in selection of health providers; access to allied health professional expertise when needed; the presence of GP and allied services in one location; the development of individual care plans and patient budgets for complex conditions and uniform access to NICE-approved treatments. Perhaps the most powerful driver will be the development of an NHS constitution, providing a written and legally binding framework for patients' rights by empowering patients to contribute to decision-making about service provision.

#### **1.8 The rationale for improving GP education in MSK conditions**

Musculoskeletal problems are common, and prevalence will rise as the population ages, and primary care services will bear a large part of the care burden. Musculoskeletal conditions make up a large proportion of a GPs workload, yet GP and patient satisfaction with management is low, with variations in practice despite the publication of guidelines. High indices of social deprivation (found in the London Boroughs of Camden and Islington where the GPs involved in the educational interventions described in this thesis are located)

are associated with an increased prevalence of MSK symptoms. There is a need to provide appropriate education for GPs on a local and national basis on optimal management of these chronic conditions. Roberts, Adebajo and Long (2002) surveyed a cohort of local GPs, and found that most mechanical and soft tissue pain could be managed in the community. Patient education, wider access to physiotherapy, and tailored continuing medical education (CME) activities were stated to be helpful in helping achieve this. Evidence suggests that primary care physicians can maximise the effectiveness of the treatment they provide by involving patients more in decision making, eliciting patient perceptions and priorities.

Over the last 10 years, the UK government has made a concerted effort to improve access to health care in the community, blurring the traditional primary care boundaries and facilitating a profound change towards integrated patient care from all health professionals. This move to community care in patients with MSK disorders has an impact on GPs in that they are in a much more powerful position to decide on patient access to community and hospital facilities. If this system is to work correctly, it is important that GPs are provided with the skills and knowledge to make appropriate decisions on patient care.

Therefore it is vital that GPs become confident in being able to manage these problems effectively. GPs are excellent sources of patient information on how best to manage MSK conditions, which can lead to better use of resources and improved patient care. As GP training in musculoskeletal diseases has been

variable, it is important to focus any educational activity on the needs of the GPs based on nature of their actual workload in MSK disorders.

In designing an educational intervention, it is important to understand current educational theories pertinent to adult learning in medical education. The next section in this chapter summarises several theories underlying adult teaching and learning that apply to medical education. Emphasis will be given to the concept of andragogy, as this has had a major impact on adult learning since the latter part of the 20<sup>th</sup> century. These theories will provide a basis for the educational approaches used in the rheumatology training course.

## **1.9 Educational theory in adult medical education**

As in positivist scientific research, educational researchers have developed theories underlying teaching and learning, with contributions from psychologists and social scientists. These theories attempt to provide a framework for the social/cognitive processes behind adult learning. An understanding of these theories is important when devising an educational intervention for adult learners.

### **1.9.1 The concept of andragogy in adult learning**

The concepts of adult learning were integrated into a framework called “andragogy”, a term first used by a German grammar school teacher Knapp in 1833 and further developed by Knowles (Knowles, 1980). This differs from pedagogy, a teacher-centred approach in which the students are viewed as

recipients of teaching, the content of which is defined by the teacher. Knowles defined andragogy as the “art and science of helping adults learn,” and established the following characteristics of adult learners, which are summarised below:

1. Adults have a concept of self-direction, and are resistant to situations where others are imposing their will. A pedagogic approach will therefore be a poor way of teaching adults.
2. Adults have greater experience of life, and the richest learning resources are from the learners themselves.
3. Adults learn on a “need to know” basis, in order to cope with real-life situations.
4. Adults perceive that learning will help them deal with situations they experience in real life.
5. Most motivation to learn comes from within the adults themselves

(Knowles, 1980)

There is debate about whether what Knowles describes is a theory or merely a description of characteristics. I would agree with the latter, and indeed Knowles later refined his concept, stating that rather than andragogy and pedagogy being mutually exclusive concepts, they are more likely to rest at either end of a spectrum of approaches to teaching and learning, that can be adopted depending on environment and learner characteristics, whatever the age. From this, Knowles described the attributes of any adult learning episode, summarised by Kaufmann, Mann and Jennett (2000) as follows:

1. An effective learning environment, allowing learners to feel comfortable and free from judgement by others
2. Teacher and learner should work together to plan the methods and content of the learning, as well as in development of strategies and resources to facilitate the learning.
3. A needs assessment by the learners will help to motivate them, let them develop learning outcomes and allow reflection and incorporation of the learning in practice.
4. Learner evaluation allows them to reflect critically on their experiences.

### **1.9.2 Motivation to learn**

Before engaging in any learning activity, in order for it to be most effective (at changing behaviour for example), the learner needs to be sufficiently motivated. Wlodowski (2004) suggests that adult motivation to learn is due to several factors: the need to be successful in their learning; the feeling of a sense of choice in their learning; valuing and enjoying the learning experience. A core principle of adult learning is that adults need to know why before engaging in a learning activity. The results of studies in medical and non-medical environments have shown that understanding learners' needs and expectations through needs assessment and mutual planning is essential (Tannenbaum et al, 1991). Learners who are given more information on the learning activity and those who are given a choice about whether to attend the activity get most satisfaction with the learning (Hicks and Klimoski 1987). The difficulty with this approach is that despite adequate planning and provision of information, a group



of learners who do not know that they need to know about a subject area, and who may therefore overestimate their skills, may not see the need to learn or attend a course. It is this group (often called an unconsciously incompetent group) that are most important to reach, but are also the hardest. An educational intervention should attempt to involve these groups. Several adult learning theories have arisen from Knowles' description of andragogy. The following sections will evaluate critically the theories pertinent to medical education in the context of a planned training course for GPs.

### **1.9.3 Transformative learning**

The underlying principle of this theory is that a significant episode of learning can change behaviour. This is the "Holy Grail" of evidence in medical education. Mezirow (1994) postulates that learning occurs when a person's perspectives on reality are not in harmony with their experience. The process of reflection on this experience results in the transformation of that individual's construction of reality. The principle has been refined for higher education, taking into account that adult learners do not abandon the "old" ways but combine the old and new knowledge together (summarised in Merriam, 1996). In medical education, the Holy Grail of a single intervention leading to long-term changes in behaviour is very hard to attain. Unless the learning is reinforced after the initial event, and the new learning is incorporated into the normal working patterns of the learner, it is likely that the learner will revert back to previous behaviours. This is illustrated in a study by Ross and Lawton (1984) who evaluated a training course in MSK disorders and found that objective tests of knowledge increased

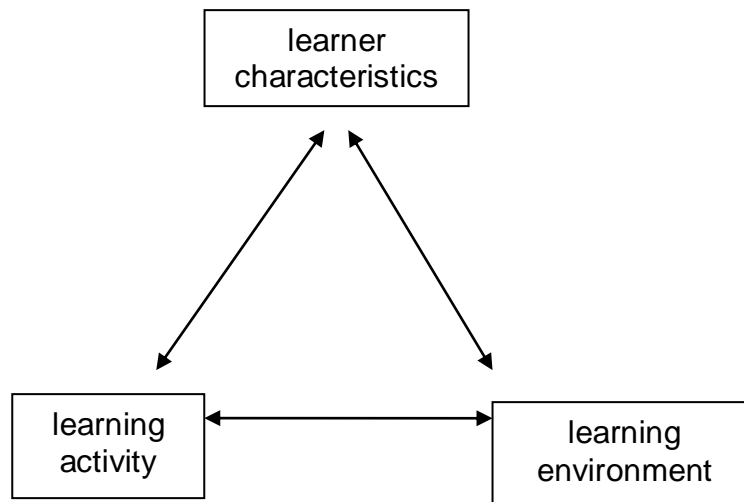
after the course, but there was no change in measure of clinical behaviour such as investigation or referral rates once back in their own working environments. Transformative learning is therefore not a model that can be used in its entirety as a theoretical basis for medical education interventions.

#### **1.9.4 Situated cognition**

Transformational learning is the ideal outcome for a medical education activity. The difficulty arises how to achieve it? Contextual factors are important, and this idea was refined further into the theory of situated cognition, which states that learning is most effective when it takes place in context - in reality - rather than in an unnatural environment (Lave, 1988). For example, it is better to learn the guitar by having the instrument with which to practise and develop, rather than watching a video that shows you how to do it. Medicine provides a paradigm for this theory, with students learning to manage patients in real circumstances. This theory would also explain why doctors find academic detailing a useful CME modality (chapter 7, section 7.3.2.4). An inference from this theory is that less authentic environments (i.e. simulation) will harm the learning process. The evidence in medical education (chapter 7, section 7.3.2.1) is that simulation can help prepare learners for real-world practice. It would seem as though situated cognitive learning has a spectrum of application, but the correlation between utility and closeness to actual practice is not necessarily linear. The importance of context in learning is clear. The next development was the integration of social and cognitive factors in adult learning

### 1.9.5 Social cognitive theory

This theory, developed by Bandura, describes a dynamic interaction between environmental and behavioural factors in adult learning. Each learning activity will have an impact on the influence of these factors on the student, seen in Figure 1.3.



**Fig 1.3 Interaction between learner, environment and learning activity in social cognitive theory (Kaufmann, Mann and Jennett, 2000)**

A medical education activity should maximise its impact on the learner with appropriate environments and learning activities. Kaufmann, Mann and Jennett (2000) describe five learning conditions to facilitate learning based on this integrated model

- demonstration, or modelling of skills
- clear learning outcomes
- learners must have relevant knowledge to meet learning outcomes
- feedback
- reflection of students on their learning

This model would seem to be practical to use as a theoretical underpinning of a medical education intervention, but the reflection on the learning needs to be followed by appropriate action to use the learning in the clinical environment. This theory does not fully reflect the theoretical underpinnings of a planned MSK training course, but leads to the idea of reflective practice and experiential learning.

### **1.9.6 Reflective practice and experiential learning**

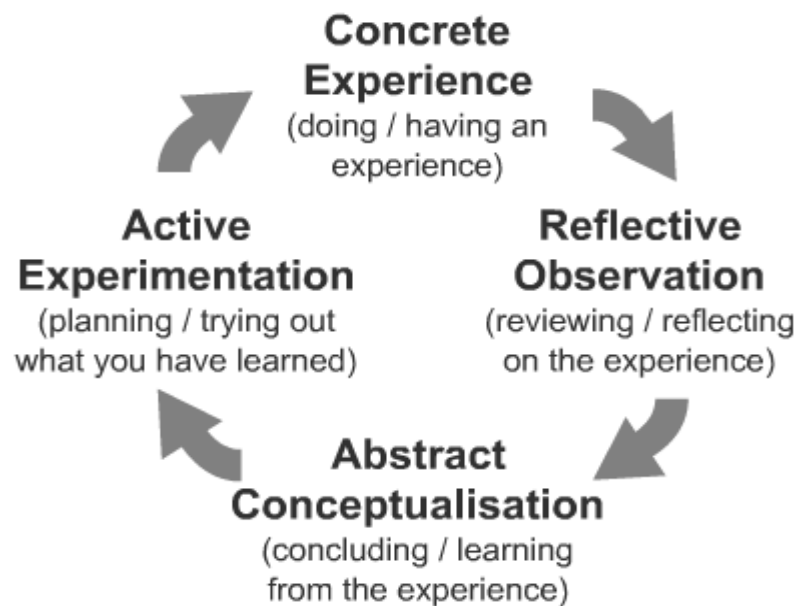
Developed by Schön (1983), he attempted to understand the processes underlying how professional groups think about what they are doing as they do it. His view was that theoretical knowledge is only a part of what is required for a professional to work effectively. What was also needed was the ability to transfer that practical knowledge to the real environment, which is more unpredictable and much more “shades of grey” than “black and white”. In medicine, this would correlate with the principles of competence and performance. Competence (ability to perform a task effectively, perhaps in a classroom or simulated environment) does not always imply that the doctor will be able to perform the task effectively in the real world. Reflective practice implies the effective integration of theory and prior experience in daily activities, both as it happens (reflection in action) and after the event (reflection on action). It is a constant cycle that enables the reflective professional to become more effective.

Interaction between learners in small groups can facilitate reflection by sharing of experiences (Al-Shehri, Stanley and Thomas, 1993), which leads to the concept of experiential learning.

Adults prefer a problem-solving approach to learning that is presented in a real-life context rather than one that is subject-orientated. This experiential learning process has been advanced by Kolb. He describes it as:

“The process whereby knowledge is created through transmission of experience.” (Kolb, 1984)

He describes four stages of the experiential learning cycle: current (concrete) experiences, reflection on these experiences, creation of concepts, and testing these concepts in new situations. The experience alone may not affect learning, it is the reflection on the experience that is the key to completing the cycle. The cycle is summarised in figure 1.3 below.



**Figure 1.4: The Kolb Cycle (From Davies and Lowe, <http://www.ldu.leeds.ac.uk/ldu> accessed 18th November 2008)**

Experiential learning has the advantages that it appeals to the adult learners experience base and increases the likelihood of a change in behaviour after the activity. Experiential learning occurs in several environments in medical education. Learning can be gained in the workplace through mentoring/supervision and “on-the-job” training on wards or in clinics. This is how many GPs gain experience in managing MSK problems (chapter 3.6.4 and 3.6.5). Experiential learning may also occur in the classroom, using simulation and exchange of experiences between teacher and learner.

An educational intervention that facilitates experiential learning and reflective practice would have characteristics more likely to effect a change in behaviour that is significant, and this was the aim of the needs-based MSK training programme described in chapter 6. The extent to which training course actually met these requirements will be discussed in chapter 7.

### **1.9.7 Teaching adult learners**

Adult education regards the teacher as a facilitator of learning, necessary and important but not sufficient alone for effective learning to take place. Several approaches to teaching adult learners have been identified utilising the theories described earlier, all of which will be used in the rheumatology training course.

Didactic teaching has been the traditional method of delivering medical education until recently. It describes the transmission of knowledge, skills or attitudes that the students **should** learn. The motivations to learning tend to be

success in summative assessments, by repeating the taught material. This approach allows learners to show that they have assimilated and can demonstrate knowledge, but there is little space for analysis, synthesis or evaluation.

A small group approach to adult education has several advantages (Peloso and Stakiw, 2000). It is learner-centred, and allows teacher to work in cooperation with the learners. Interaction is a large part of small group work, creating a social family to which they belong and can identify with. It also allows learners to gauge their understanding of the subject matter by expressing it and comparing it with peer understanding. Small groups function to fulfil a variety of tasks that would be more difficult in large group didactic teaching, such as generating ideas, clarifying/solving problems, listing of items from experience or group observation and discuss misunderstandings. Small group-work is important in maximising the success of an MSK training course, limiting numbers to a maximum of 20 people.

Problem-based learning (PBL) covers a spectrum of teaching methodologies in which the learners encounter a problem, followed by a learner-centred systematic inquiry process (Barrows and Tamblyn, 1980). The problem does not need to be “solved” per se, but the issues and concepts surrounding the problem should be explored. Reviews of PBL in medical education broadly agree that there is a small but significant effect on diagnostic ability and clinical

reasoning (Albanese and Mitchell, 1993; Colliver, 2000). The advantages of PBL are summarised as follows (Schwarz, Menin and Webb, 2001)

1. promotion of deep rather than surface learning
2. enhancement of self-directed skills
3. a more stimulating learning environment
4. promotion of interaction between teacher and learner
5. increased enjoyment
6. improvement of motivation

Disadvantages include increased costs and demands on staff time, lack of effect with larger class size and lack of enthusiasm of some teachers and learners to this approach, perhaps due to poor training (Spencer and Jordan, 1999). Overall it seems a useful approach to use with experienced adult learners in conjunction with other methods, and will be used in the MSK training course. From a pragmatic point of view, using a pure PBL approach would allow the GPs time to reflect on the clinical problem and find information that would help them find the optimum management for the patient with the MSK symptoms described. In some PBL courses, this period can last several days to a week. This would mean that the course would become impractical for the GPs to attend due to their workloads, and could have affected the numbers of GPs willing to attend the course. A practical way forward would be to incorporate elements of PBL into the course that was not split into parts but delivered as a whole. The extent to which PBL was achieved will be discussed in chapter 7.



## **1.10 Education theory summary**

In this section we have discussed how several theories can be used to maximise the effectiveness of a medical education intervention. These theories were used to inform the educational approach of the rheumatology training course in that it:

1. was learner-centred
2. used prior experience and reflection on these experiences in facilitating learning and maximising the chances of change in behaviour.
3. allowed learning in context, using small group and problem-solving approaches rather than just didactic lectures.

## **1.11 Aims and objectives of this thesis**

The research question posed in this thesis is: Is it possible and feasible to improve GP delivery of care to patients with MSK problems with an evidence-based educational intervention? This thesis describes the development of a needs-based training programme for General Practitioners in Camden and Islington Primary Care Trusts. We hypothesise that training in management of MSK disorders in primary care is variable due to several factors:

1. Shortcomings in GPs undergraduate and postgraduate training
2. Lack of appropriate structure and content of CME interventions that facilitate changes in behaviour and practice.

### **1.11.1 Research Objectives**

1. To investigate GPs experiences of undergraduate, postgraduate and continuing medical education in musculoskeletal disorders.
2. To investigate GPs self-rated confidence in managing musculoskeletal disorders, and to understand how important they rate knowledge of management of specific MSK disorders in primary care.
3. To investigate GPs preferences for the structure and content CME activity that will maximise their learning.
4. To evaluate the effect of a needs-based training course in GP confidence and skills.

### **1.12 Outline of the thesis**

Chapter 1 has summarised the burden of MSK disease, and described how government policy is moving care for the vast majority of these patients into the community, where GPs need to have appropriate knowledge and skills to manage these disorders. Chapter 1 has also discussed the adult-learning educational theories pertinent to the development of a needs-based educational intervention for GPs.

Chapter 2 describes the case study approach to the needs assessment, using mixed quantitative and qualitative methodology.

Chapters 3 and 4 respectively describe the quantitative and qualitative aspects of the needs assessment and how this was used to define the content and structure of the training course.

Chapter 5 describes the development of a Patient Partners with back pain programme to teach medical students and then GPs.

Chapter 6 describes the content, structure and evaluation of the MSK training course.

In chapter 7, the thesis findings are summarised in order to draw out meaningful conclusions about the feasibility and effectiveness of developing, delivering and evaluating the effect on patient care of a needs-based educational intervention on MSK disorders for GPs. Strengths and limitations of the research, and areas for further work will be discussed

## **Chapter 2: The case study methodological approach to assess GP learning needs in MSK disorders**

### **2.1 Introduction**

This chapter will describe the rationale for using a mixed-methodology approach using the case study paradigm in order to carry out an effective learning needs assessment.

### **2.2 Why a learning needs assessment is important**

Learning is more likely to lead to a change in practice when a needs assessment has taken place, the learning is reinforced and there is motivation to learn (Grant and Stanton, 2000). Grant (2002) stated that the old target-based form of credit for educational activities was not based on learners needs, but on seemingly random subject areas that were convenient to teach on at the time. But to balance this, learners may not identify all their needs, or indeed prioritise them appropriately.

Gillam and Murray (1996) split needs into different categories

- felt needs – what learners say they want
- expressed needs – what learners say by their actions
- normative needs – defined by experts
- comparative needs – defined by group comparison

Grant (2000) lists a wide range of qualitative and quantitative modalities that are used to assess needs. The methods used in this needs assessment are summarised in table 2.1. In order to get a more true picture of GP learning

needs in all four domains, a mixed method approach is needed, using interviews, questionnaires and evidence from the literature. The case study model provides a theoretical model for aspects of the needs assessment.

<b>TABLE 2.1: LEARNING NEEDS ASSESSMENT MODALITIES MAPPED TO DOMAINS OF LEARNING NEED</b>	
<b>Learning need category</b>	<b>Mode of assessment</b>
Felt need	Questionnaire Semi-structured interviews
Expressed need	Questionnaire Semi-structured interviews
Normative need	Personal experience Literature review
Comparative need	Literature review

### **2.3 What is a case study**

The case study is used widely in social science and health research. Definitions of what a case study is have focused on its difference from classic positivist scientific research; its use as a method to investigate a point or period in time, and a contextual study taking place in real-life that requires a holistic approach to investigation, using quantitative and qualitative approaches to aid understanding of the often blurred boundaries between phenomenon and context (Yin 1994). Stake (1995) described a case study as an investigation of a “bounded system”, in this case the management of MSK disorders in primary care.

### **2.3.1 Types of Case Study**

Theorists have described several styles of case study research. Bassey (1999) summarises the theories of Stenhouse, who describes four styles: ethnographic, evaluative, educational and action research, which are mutually exclusive to my mind. I prefer those developed by Yin (1993), which can include one or more of Stenhouse's categories

- exploratory, defining and developing theory from the data, similar to concepts behind grounded theory (Glaser and Strauss, 1967)
- descriptive, showing an in-depth description of a phenomenon in its context
- explanatory, using the data collected to understand cause and effect relationships.

With reference to the learning needs of GPs in MSK disorders, this case study framework would allow data from the case study to explain how prior experience has led to current practice in management of MSK problems and develop an intervention to effect an action (in other words a needs-based training course) to facilitate change in knowledge and skills in management of MSK disorders.

### **2.4 The use of mixed methodology in this needs assessment**

Brannen (1992) discusses the use of mixed methods in research. She mentions that quantitative work may provide the basis for sampling of cases which form an intensive qualitative study. Conversely, qualitative work can also inform the content and structure of a questionnaire. The mixed method paradigm is well

established in the field of education needs assessment. Crandall (1998) in an analysis of 100 citations of professional education needs assessment showed that mixed methodologies were common, using combinations of interviews, surveys, and participant observations. Data from multiple approaches would give me with a deeper understanding of GPs' educational and professional journey to become able to manage musculoskeletal problems than I would have obtained using a single approach. This would provide me with a framework to develop the training course using data from the learners themselves, a "bottom-up" approach rather than the traditional "top-down" method, in which I, as the specialist would determine the content of a training course based on my theories and concepts of what a GP should know and how best to attain that knowledge, in turn based on my experiences and interactions with GPs, patients and other health professionals.

#### **2.4.1 Assessing the quality of a mixed methodology needs assessment**

It is important for any research to be able to stand up to independent review. In quantitative methodology, validity and reliability of the research process and data obtained must be addressed. Bowling (2002) emphasises the importance of appropriate sample size in order to reduce sample bias. Many qualitative researchers feel that the judgements applied to quantitative cannot be applied to qualitative studies as there is no single version of the "truth" or reality that is independent of the researcher. Rather there are different ways of looking at the world that are created from the research process (Lincoln and Guba, 2000).

Others agree with the concept that all research is subjective and produces different viewpoints, but that we are able to represent the truth/reality through different research methodologies. Nevertheless, it is important to ensure validity in qualitative data. The following section will discuss this in more detail.

#### **2.4.1.1 Triangulation**

Triangulation is a term used in both quantitative and qualitative methodologies to ensure validity and reliability of results. In a qualitative study this may mean comparing data from observations, interviews and documentary evidence. All these data will look at the research topic from different viewpoints, and may or may not all agree with each other. If all sources do not agree, this does not necessarily reduce the theories or conceptual frameworks that arise from the data. Indeed, it may encourage the formation of new theories that require further investigation. It is important not to ignore these “negative cases”. Rather like looking at the sea from different portholes of a ship, each view contributes to the overall picture, and no view is intrinsically “wrong” or more representative than another. Mays and Pope (2006) prefer the term “comprehensiveness” of findings.

#### **2.4.1.2 Generalisability**

A common concern from many researchers about case-study methodology is that of the problem of generalisability of the data when numbers are small. Other comments include lack of scientific rigour (Bassey, 1999). As a doctor trained in interpreting quantitative, deductive methodology, generalisation of data, making



it universal to all contexts is seen as an essential part of assessing the quality of a piece of research. Yin (1994) describes this as statistical generalisation that is not suited for case studies. He advocates the use of the term “analytical generalisability”, in which:

“... a previously developed theory is used as a template with which to compare the empirical results of the case study. If two or more cases are shown to support the same theory, replication may be claimed.” (Yin, 1994)

Lincoln and Guba (1985) discuss the concept of transferability or fittingness i.e. how do the findings described in this case study apply to another context? This decision is made by the reader, who will therefore need as much description of the context / environment in which a study took place.

## **2.5 Critical appraisal of methodologies used in this project**

Although the methodology described above fits many aspects of a case study, it could be criticised for not fulfilling all the requirements. The “bounded system” in this case would include stakeholders other than the GPs themselves, including patients, administrative staff, allied health professionals and hospital specialists. In order to give the study maximum validity and transferability and a fuller understanding of how GPs management of patients with MSK disorders fits with care of these patients in the wider health economy, other stakeholder perspectives could have been evaluated. This was not possible in the time constraints of the project however, and GPs were asked about their relationships with these stakeholders in patient management. Patient partners (chapters 5 and 6) views on relations with doctors were included in this project and fit within a case study paradigm. The approach used in this project also fits Yin’s propositions (1994) that a case study methodology should involve four stages of design, data collection, analysis and development of conclusions,

recommendations and implications. These four aspects are described in chapters 3-7.

The case study approach allows use of elements of grounded theory in developing theories from the data, although it can be argued that this approach does not qualify as true grounded theory as the case study will involve data collection from a finite number of GPs and data will not be collected until theoretical saturation is reached. This was a pragmatic decision based on time available in the project for data collection, analysis and then development and delivery of the MSK training course.

An ethnographic approach (Gillham, 2005), involving direct observation of GPs in practice managing patients with MSK disorders would provide detailed data but in practice would alter the dynamics of the GP-patient interaction and could be viewed negatively by GPs as an “assessment” of their care rather than observation, and would also disrupt their daily work patterns. An ethnographic approach would also require significant time to collect data. A pragmatic approach would be to visit GP practices to understand “in context” the issues surrounding management of patients with MSK disorders, without actually observing consultations.

Group interviews (focus groups) could also have been used in the context of this case study (Gillham, 2005). This may have given data different to that obtained in individual interviews. However, when discussing issues such as individual learning needs in a group, some GPs may have been reluctant or inhibited to discuss them amongst their peers. For this reason, group interviews were not used.

## **2.6 Conclusion**

Notwithstanding the issues described above, the needs assessment fits many but not all characteristics of a mixed methodology case study. Other qualitative approaches were considered and rejected on the grounds of practicality and/or time constraints.

A methodological approach to a learning needs assessment using a case study paradigm allows the researcher to use both quantitative and qualitative methods in the investigation of a specific group of north London GPs. Chapters 2 and 3 with describe in detail the methods and results of this needs assessment. At the end of chapter 3, unifying conclusions based on both aspects of the needs assessment will be discussed.

## **Chapter 3: A case study to assess GP learning needs in musculoskeletal disorders. The quantitative study**

### **3.1 Chapter summary**

For the initial phase of the case study, a questionnaire was developed for GPs in Camden and Islington PCTs looking at their training experiences in managing MSK disorders, and what CME activities they engaged in with respect to MSK conditions. Of the 75 GPs responding to the questionnaire, the majority had not had any postgraduate experience in managing MSK disorders, though in the same group, attendance at education activities focusing on MSK disorders was high. The most frequent form of educational activity was in the form of lectures. GPs rate knowledge of MSK disorders as important in primary care.

### **3.2 Introduction**

In this chapter I will describe the quantitative methodology used to perform an assessment of learning needs in rheumatology for GPs. From the data obtained in this chapter, together with the qualitative research described in chapter 4, the aim was to develop a framework to underpin the educational theory behind, and content of a subsequent training course. The questionnaire survey was descriptive, observational and cross-sectional and carried out by postal survey.

### **3.3 Aims of the quantitative needs assessment**

The main aims in this part of the thesis were to develop a questionnaire appropriate to UK primary care doctors working in north London to elicit responses which reflected the following domains of interest:

1. What experience GPs had in managing MSK disorders during postgraduate training.
2. To find out what form, if any, continuing medical education in MSK disorders local GPs have accessed since vocational training
3. To evaluate their self-perceived confidence and skills in managing MSK problems
4. To investigate how important GPs feel knowledge of management of different musculoskeletal problems is in primary care.
5. To understand the preferred characteristics (duration, educational approach) of a planned MSK training course.

### **3.4 Development of a questionnaire for GPs**

The development of the different sections of the GP questionnaire will now be described. Although the full questionnaire is contained in Appendix 1, appropriate parts of the questionnaire are reproduced below

#### **3.4.1 Section 1: Postgraduate training in MSK disorders**

The first section of the questionnaire explored postgraduate training in MSK disorders. It was important to be able to capture any experience, however short and in any environment. Question 1 required a dichotomous Yes/No response

as to whether their postgraduate training involved rheumatology. Question 2 allowed those responding yes to question 1 to select the modalities of training appropriate to their experiences, ranging from regular to ad hoc experiences in secondary care, with free text space for other modalities not mentioned in the question text. This section of the questionnaire is reproduced below

<p>1. Did your postgraduate training involve any rheumatology experience?</p> <ul style="list-style-type: none"><li>• Yes</li><li>• No</li></ul> <p>2. If YES, what form did this experience take?</p> <ul style="list-style-type: none"><li>• Regular Clinic</li><li>• Occasional Clinic</li><li>• Sitting in on clinics</li><li>• Attendance on ward rounds</li><li>• Other.....</li></ul>
--

### **3.4.2 Section 2: Continuing medical education in MSK disorders**

This section asked whether respondents had attended any continuing medical education activity to help them manage MSK disorders, and if so, what the nature of the educational events were. The environments and structure of CME is heterogeneous, with events taking place in the workplace or in teaching centres, using different group sizes, but with lectures being one of the most frequent modalities of delivering CME activities (Badley and Lee, 1987, Davis et al, 1995). The questionnaire provided options for respondents to select one or more modalities from a checklist, with space for free text if needed to clarify or expand their responses. The questions are reproduced below, and are adapted

from the domains used by Glazier et al (1996) in their study of CME activity in MSK disorders in Canadian GPs

3. As part of Continuing Medical Education, have you attended any courses, workshops or clinics to help you in dealing with musculoskeletal complaints?

- Yes
- No

4. If YES, what form did the education take?

- Clinics
- Ward rounds
- Lectures
- Courses
- Other.....

### **3.4.3 Section 3: Importance of, and confidence in managing MSK disorders.**

For this part of the questionnaire, the questions used in the Glazier paper were expanded and adapted. I wanted to understand GPs perceptions of the importance of MSK conditions in primary care as well as their confidence. Davis et al (2006), in a systematic review of 17 suitable studies, found little correlation between perceived competence and actual performance. Therefore instead of asking about self-perceived confidence in all domains, I asked about perceived importance, so avoiding the question of self-assessment in the respondent and requiring a more objective assessment in relation to their practice.

The musculoskeletal problems included in the list were derived from the Learning Guide for General Practitioners and GP registrars on Musculoskeletal Problems (Arthritis Research Campaign, 2000), with additional categories of paediatric problems, and new therapies in arthritis. MSK problems in children and adolescents are common, and confidence of GP trainee of examination and diagnosis of MSK problems in children is poor (Foster et al, 2006). The therapies category was included, as at this time there was a lot of interest and literature regarding cyclo-oxygenase-2 (COX-2) inhibitors and anti – tumour necrosis factor (TNF) therapies in arthritis. From my experience at other GP teaching sessions, this was an area that usually led to many questions. Sjögren's syndrome was also added as sicca symptoms are prevalent, and I was interested to see how important GPs felt this condition was compared to other MSK disorders. There was an opportunity for free text response at the end of this section for respondents to add in subject areas not mentioned in the main part of this section.

Likert scales were used to document responses. Likert scaling is commonly used to measure attitudes, and contains a series of statements about an issue (Bowling, 2002). The extremes of the scale (position statements) are often “strongly agree” or “strongly disagree”. The subject decides how much they agree with the attitude in question, commonly on a 5-point scale. The subject then selects a number that most closely resembles their attitude, with 1 commonly being “strongly disagree”, and 5 being “strongly agree”. The intervals between numbers are not assumed to be equal. These scales can tell you how



subjects order their attitude, but not how close or not those attitudes are (Bowling, 2002). The questions used in this section of the survey are shown below.

5. How important do you think knowledge of musculoskeletal problems is to Primary Care?

Not at all important 1      2      3      4      5      Extremely important

6. How do you rate your confidence in managing musculoskeletal problems?

Not at all confident 1      2      3      4      5      Extremely confident

7. How important do you feel knowledge of the following musculoskeletal problems and their management are in primary care

	Not at all important				Extremely important
• Back Pain	1	2	3	4	5
• Osteoarthritis	1	2	3	4	5
• Soft tissue musculoskeletal problems e.g shoulder, elbow.	1	2	3	4	5
• Injection techniques	1	2	3	4	5
• Rheumatoid arthritis	1	2	3	4	5
• Other inflammatory forms of arthritis (Psoriatic arthritis, ankylosing spondylitis etc)	1	2	3	4	5
• Osteoporosis	1	2	3	4	5
• Connective tissue diseases (Lupus, Scleroderma, vasculitis, myositis etc)	1	2	3	4	5
• Sjögren's Syndrome	1	2	3	4	5
• Paediatric rheumatology	1	2	3	4	5
• New therapies in arthritis	1	2	3	4	5

Are there any topics not mentioned above that you feel should be covered in a practical course on musculoskeletal problems in primary care.

#### **3.4.4 Section 4: Characteristics of an MSK training course**

There is wide variation in the duration of CME activities in the literature, and I wanted to understand respondents' perceptions about the optimal duration of a training course taking into account their work commitments. The final section of the questionnaire also asked respondents if they were willing to take part in interview discussions to help define the content of a training course; whether they would wish to attend a dedicated training course on MSK disorders, and what days of the week were most suitable for each respondent to be able to attend. This section of the questionnaire is reproduced below:

Would you be interested in Taking part in a discussion on rheumatology training in Primary Care?

- Yes
- No

Would you be in attending such a PGEA approved training course in rheumatology?

- Yes
- No

Which would be the best format ?

- 1 whole day
- 1 half day
- 1 ½ days
- 2 whole days
- 2 half days
- Other.....please specify

Which days of the week are best for you.

- Monday am
- pm
  
- Tuesday am
- pm
  
- Wednesday am
- pm
  
- Thursday am
- pm
  
- Friday am
- pm

### **3.4.5 Piloting**

The first draft of the questionnaire was piloted on a cadre of four clinicians in the Academic Centre for Medical Education, comprising GPs, hospital doctors and educationalists in May 2002. Based on their comments, changes were made to the questionnaire to improve its clarity and ease of comprehension. The finalised version was printed (double-sided) on white A4 paper and stapled together and ready for distribution pending ethical approval.

### **3.4.6 Recruitment of GPs for needs assessment questionnaire**

Potential participants were all GPs and members of the North Central Thames Research Network (NoCTen), which is now part of the North Central London research Consortium (NoCLoR). Hereafter, the term NOcTeN will continue to be used. The project was registered with them, and access given to the database of network members in April 2002. The NoCTeN database contained a total of 529 members, a mixture of clinicians, allied health professionals and administrative staff. All non-GPs were excluded. GPs from outside Camden and Islington Primary Care Trusts were also excluded. The total number of GPs eligible to be included in the study was 148.

### **3.4.7 Research Ethics**

Ethical approval for the project was submitted initially in early 2003, and then resubmitted with amendments in May 2003. Official approval was granted in May 2003 (ref: 03/06). In addition, permission was granted by the North Central

London Community Research Consortium to proceed with the project and acted as research sponsors.

### **3.4.8 Distribution of questionnaires**

The final version of the questionnaire was sent by mail in late May 2003 with a covering letter from primary investigators (myself and Professor Jane Dacre) on headed paper containing both University College London and Arthritis Research Campaign logos stating the nature of the research project and requesting their support in completing the questionnaire. A supporting letter from NoCTeN was also attached, assuring GPs that this study had been given their approval and thanking them for taking part. A reply-paid envelope was included, addressed to myself at the Academic centre for Medical Education. Questionnaires were sent in May 2003. The questionnaire asked for GP name and contact details, so were not anonymised. All GPs involved in the mailing were assigned an identification code that was used when entering and analysing the data, so maintaining anonymity during data analysis. A written reminder and further questionnaire were sent after 4 weeks to those who had not responded. No further contact was made after this point.

### **3.5 Statistical analyses**

Data were entered on a Microsoft Excel spreadsheet and then imported into a statistical software package Statistical Package for Social Sciences version 16.0 (SPSS ® for Windows ®, SPSS Inc, Chicago, IL, USA). Data were analysed by descriptive statistics to derive frequencies, means and medians. Analysis of

differences in means and medians of continuous data was not normally distributed was performed using the T-test for independent samples. Non-parametric ordinal data was analysed for differences within and between groups using the Kruskal-Wallis, Friedman or Mann-Whitney-U tests as appropriate. A p-value of  $<0.05$  was taken to be significant. The data were mainly descriptive, and we did not feel the need to modify the p-value to take into account multiple testing. In tables NS is used to denote a statistically non-significant result. S is used to denote a statistically significant result. In both cases, the p-value is also given.

## **3.6 Results**

### **3.6.1 Response rate to questionnaire**

As described in section 3.4.6, our study population included 148 GPs in Camden and Islington PCTs. In total, 78 responses (response rate 52.7 %) were returned after the second mail reminder. Two responses contained no means of identifying the respondent. One GP wrote that he was not a rheumatologist and would not complete the questionnaire, indicating a misunderstanding about the nature of the survey. A further questionnaire was sent with an explanatory note, but no response was received. Three responses were excluded from the analysis. The total number of questionnaires that could be analysed was 75 (50.7%). No partially completed questionnaires were received.

### 3.6.2 Demographics of responding GPs

The demographics of the responding GPs are shown in table 3.1. Almost equal number of men (48%) and women (52%) responded. The mean time in practice was 20.4 years, with a range of 5-38 years. There was no statistically significant difference in number of years in practice between men and women.

<b>TABLE 3.1: DEMOGRAPHICS OF GPs RETURNING NEEDS ASSESSMENT QUESTIONNAIRE</b>	
<b>Gender (N/75 (%))</b>	
Male	36 (48)
Female	39 (52)
<b>Time in practice (years)</b>	
<b>All</b>	
Mean	20.4
Range	5-38
Standard Deviation	8.2
<b>Men</b>	
Mean (years)	20.1
Standard deviation	8.1
<b>Women</b>	
Mean (years)	20.7
Standard deviation	8.3
<b>Difference in years in service between men and women</b>	NS (p=0.7)



### **3.6.3 Demographics of non-responders**

Non-responders were classed as those who did not respond to the questionnaire after the 2<sup>nd</sup> mailing, or those who submitted an incomplete or unidentifiable questionnaire. Of the 148 GPs sampled, 73 were classed as non-responders using these criteria, of whom 43 were men (59%) and 31 were women (44%).

### **3.6.4 Rheumatology experience during postgraduate training**

Over half of the responding GPs (59%) had not received any postgraduate education in rheumatology during their training. Of the 31 GPs with rheumatology experience during training, only 5 (16%) had a substantive post in rheumatology at House Officer (HO) or Senior House Officer (SHO) level, and 2 GPs (6%) had experience at the clinical assistant level during and after their GP training. The most common form of training was in the form of attendance at ward rounds (12/31GPs, 38%) and clinics (16/31 GPs, 52%). Table 3.2 summarises the results.

<b>TABLE 3.2: POSTGRADUATE RHEUMATOLOGY EXPERIENCE OF GPs</b>	
<b>Postgraduate Rheumatology experience</b>	
Yes (%)	31/75 (41)
Male (%)	18/31 (58)
Female (%)	13/31 (42)
No (%)	45/75 (59)
Male (%)	19/45 (42)
Female (%)	26/45 (58)
<b>Mode of postgraduate experience (N=31)</b>	
Ward rounds (%)	12 (38)
Hospital Clinics (%)	16 (52)
Clinical assistant (%)	2 (6)
Rheumatology HO/SHO (%)	5 (16)

### 3.6.5 CME in rheumatology undertaken by GPs

Table 3.3 summarises the CME experience of the responding GPs. The majority of responders (79%) had engaged in CME activities in rheumatology since becoming a GP. Of the 59 GPs undertaking rheumatology CME, 29 GPs (49%) attended courses and 34 GPs (58%) attended lectures. Few respondents had undertaken a formal postgraduate qualification (1 GP, 2%) or attended specialist clinics (9 GPs, 15%)

<b>TABLE 3.3: CME ACTIVITIES OF GPs</b>	
<b>CME activities in rheumatology after vocational training</b>	
Yes (N/75, %)	59 (79)
Male (N/59, % )	32 (54)
Female (N/59 %)	27 (46)
No (N/75, %)	16 (21)
Male (N/16, %)	10 (63)
Female (N/16,%)	6 (37)
<b>Form of CME activity (N=59, %)</b>	
Courses	29 (49)
Lectures	34 (58)
Postgraduate qualification (eg certificate, diploma)	1 (2)
Learning from specialist in clinic	9 (15)

### 3.6.6 Importance of Rheumatology in Primary Care

Table 3.4 summarises the results. GP perception was that knowledge of MSK problems was important in primary care with a median score of 4 out of 5 (mean 4.4 out of 5). There was no statistical difference in response between men and women using the Mann-Whitney-U test ( $p=0.5$ ). Length of practice (stratified into number of decades) had no effect on response ( $p= 0.13$  using the Kruskal-Wallis test)

<b>TABLE 3.4: GP PERCEPTION OF IMPORTANCE OF RHEUMATOLOGY IN PRIMARY CARE</b>	
<b>All</b>	
Mean	4.4
Median	4
<b>Men</b>	
Mean	4.4
Median	4.0
<b>Women</b>	
Mean	4.5
Median	5
<b>Difference in scores between men and women</b>	NS ( $p=0.5$ )

### 3.6.7 Confidence in managing musculoskeletal problems

Table 3.5 shows that GP self-reported confidence in managing MSK problems was rated with a median of 4 out of 5 (mean 3.2 out of 5) for all responders.

There was a statistically significant difference between confidence ratings between men and women (median rating 4.0 for men and 3.0 for women) using the Mann-Whitney-U test ( $p=0.01$ ). Length of service (stratified by number of decades) had no effect on response ( $p= 0.41$  using the Kruskal-Wallis test.)

<b>TABLE 3.5: GP CONFIDENCE IN MANAGING MUSCULOSKELETAL PROBLEMS</b>	
<b>All</b>	
Mean	3.2
Median	4
<b>Men</b>	
Mean	3.5
Median	4.0
<b>Women</b>	
Mean	3
Median	3
<b>Difference in confidence between men and women</b>	<b>S</b> <b>(<math>p=0.01</math>)</b>

### 3.6.8 GP perception of importance of knowledge about specific MSK problems in primary care

Shown in table 3.6, GPs felt that knowledge of the most common problems seen in primary care were important (back pain, osteoarthritis, osteoporosis, soft tissue problems). Back pain and osteoarthritis achieved the highest mean and median scores from all GPs. Joint injections, connective tissue diseases,

paediatric rheumatology and Sjögren's syndrome were ranked as less important by the responding group. The differences in scoring of for each subject domain in the questionnaire by all GPs were statistically highly significant ( $p= 0.001$  using the Friedman test) indicating that the differences found are very unlikely to be due to chance, and are a true reflection of GPs perceptions. There was no statistical difference in scoring of each rheumatology problem between men and women using the Mann-Whitney-U test, although back pain and osteoporosis neared significance ( $p$  values 0.08 and 0.07 respectively). Length of practice (stratified by number of decades) had no effect on responses

**TABLE 3.6: GP PERCEPTION OF IMPORTANCE OF KNOWLEDGE ABOUT SPECIFIC MSK PROBLEMS IN PRIMARY CARE**

	Back pain	Osteoarthritis	Soft tissue disorders	Rheumatoid arthritis	Osteoporosis	Other inflammatory arthritis	New therapies	joint injection	Connective tissue diseases	Paediatrics	Sjögren's syndrome	Differences between scoring of each subject by all GPs
<b>All GPs</b>												
<b>Mean</b>	4.8	4.6	4.4	3.8	4.4	3.6	3.5	3.3	3.1	2.9	2.8	<b>S</b> <b>p=0.001</b>
<b>Median</b>	5.0	5.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	
<b>Men</b>								3.4				
<b>Mean</b>	4.7	4.6	4.4	4.0	4.2	3.7	3.4	3.0	3.2	2.9	3.0	
<b>Median</b>	5.0	5.0	4.0	4.0	4.0	4.0	4.0		3.0	3.0	3.0	
<b>Women</b>								3.3				
<b>Mean</b>	4.9	4.6	4.4	3.7	4.5	3.5	3.4	3.0	3.0	3.0	2.7	
<b>Median</b>	5.0	5.0	4.0	4.0	4.0	3.0	4.0		3.0	3.0	3.0	
<b>Difference in scores between men and women for each subject</b>	NS 0.08	NS 0.61	NS 0.93	NS 0.17	NS 0.07	NS 0.22	NS 0.92	NS 0.43	NS 0.18	NS 0.49	NS 0.16	

### **3.6.9 Timing of a training course**

47/75 responding GPs (63%) wanted a future course to be of 1 day duration. 3 GPs (3%) wanted a course of between 1 and 2 days. The remaining 25 GPs (34%) wanted a half-day course. There was no consistent day of the week that was most popular. The duration of any course is a balance between sufficient time to achieve the learning objectives and the amount of time that the learner can afford to be away from their normal work. 1.5 days was considered a good compromise in order to maximise the number of GPs that could attend, and that would allow the learning objectives to be met.

## **3.7 Discussion**

This chapter has described the quantitative methodology behind and results of a needs assessment in order to devise a training course for GPs in MSK disorders.

### **3.7.1 Needs Assessment Questionnaire: response rate**

The response rate to the needs-assessment questionnaire was 51.3%. This response rate is similar to other UK studies looking at primary musculoskeletal confidence and skills. Roberts, Adebajo and Long (2002) sent a questionnaire to a larger number of UK GPs (n=446) and had a 54% response rate after a postal reminder. Mulhall and Masterson (2005), in their study of 200 Irish GPs, looking at musculoskeletal training and examination skills, had a response rate of 50.5%. However, it can be argued that if 50% of people do not reply to a questionnaire, are the results representative of the group being studied, so called non-

responder bias. A higher proportion of men did not respond to the questionnaire. As far back as 1978, health professionals were investigating this very issue. Cartwright (1978) found that non-responders to questionnaires sent to health professionals were more likely to be older, less amenable to being involved in research and, more controversially, have poor relationships with patients and a lower knowledge base. Cummings, Savitz and Konrad (2001), in a meta-analysis of questionnaire studies involving physicians found an average response rate of 61%. Kaner, Haighton and McAvoy (1998) found that the sheer number of questionnaires received, and the increasing administration workload prevented completion of questionnaires, the majority of them being thrown away. They also identified factors that were more likely to lead to a response, namely a pre-existing interest in the subject area, lack of identification (even by a code), research that was local and with sufficient accompanying written information. In our needs assessment study, several features of good practice were used: the research was local and full information was given in an accompanying letter. Further “credentials” were given by support from the local primary care research network NoCTeN. However, the questionnaires required respondents to attach their name and contact details. This may have discouraged many from responding, even though the information requested in the questionnaire was less likely to cause distress. In terms of generalisability, a response rate of 50% is a limitation. The large range of experience in general practice of the responding GPs (mean 20.4 years, range 5-38) gives the results increased validity.



The NoCTeN list of GPs did not contain all the GPs in Camden and Islington PCTs, and bias could be introduced here as the GPs on the NoCTeN list could be inherently more interested in research. According to Cartwright's (1978) propositions, the non-responding group would be most in need of training, but are in reality the hardest to reach. In retrospect, a higher response rate could have been achieved by contact with those doctors on an individual basis, by telephone or in person. This strategy is high-risk, as they may not wish to have been contacted, and the negative experience of "cold-calling" may put them off participation in future studies.

### **3.7.2 Needs assessment questionnaire: GP training in managing MSK disorders**

Postgraduate experience in rheumatology was seen in only 41% of the responding group of GPs, and in this group was limited to attendance at ward rounds and clinics rather than substantive training posts. Data from this questionnaire study confirms findings in previous studies (see chapter 1.4), with few of the GPs who reported postgraduate rheumatology experience actually having a substantive HO or SHO post (5/31 GPs). Later studies taking place after the completion of this project have also showed poor musculoskeletal education in primary care (Mulhall and Masterton, 2005) .

### **3.7.3 Continuing medical education in MSK disorders for GPs**

It was reassuring to see that in our study 59/75 responding GPs (79%) had ever attended a CME activity in MSK disorders. Consistent with the literature (Badley and Lee, 1987), these CME events were largely in the form of lectures (58% of

GPs) rather than learning from specialists in clinics (15% GPs). Postgraduate qualifications in MSK disorders were rare in our study, perhaps reflecting time constraints and awareness and enthusiasm for postgraduate study opportunities. 49% GPs who responded as having attended a course in MSK disorders, which may further underestimate the prevalence of lectures. More detailed exploration of this hypothesis in the questionnaire would have helped to clarify this point.

#### **3.7.4 Perceived confidence and skills**

The responding GPs rated knowledge about MSK problems in primary care as very important (median 4.0), and as a group rated themselves confident in managing these conditions (median 4.0). Men rated themselves significantly more confident than women. This is consistent with other literature (Blanch, 2008, Glazier et al, 1996), although there is poor correlation between self-rated confidence and performance (Tracey et al, 1997; Marteau et al, 1989). Glazier links confidence with the concept of self-efficacy, a judgment on the ability to perform a task, an important factor affecting physician behaviour. It is difficult to draw specific conclusions from a high confidence rating, and these findings did not discourage the further development of the training course.

#### **3.7.5 Importance of specific MSK conditions in primary care**

GPs ranked conditions that are seen commonly in primary care as the most important areas in which a GP needs to have knowledge. Joint injection was not as high on the list as expected, perhaps reflecting large variability in GP confidence and frequency of performance of these skills. Confirming this theory,

a US study, fewer than 20% of primary care doctors carried out joint or soft tissue injections, the majority referring to hospital specialists. The main reason for this was perceived discomfort in performing the procedure (Jolly and Curran, 2003). The lower scoring topics were the connective tissue diseases and paediatric rheumatology. Although rare, the connective tissue diseases such as systemic lupus erythematosus are important and they present with a wide spectrum of symptoms that are non-specific, such as fatigue and joint pain. GPs should be aware of the main features of CTDs that should trigger a specialist referral. Despite the presence of printed material from charities such as Lupus UK and the Arthritis Research Campaign, it may not be the most effective way to change behaviour or practice. In the MSK training course, the CTDs were included in the context of ordering and interpreting autoantibody tests rather than a discussion of each CTD in turn, focusing on learning based on daily practice and using normative needs defined by experts to inform the content of the course (Gillam and Long, 1996).

Although paediatric rheumatology was rated low in importance, it is a significant issue in primary care, with studies showing a prevalence of up to 36% in adolescents. The main causes for pain in children are self-limiting soft tissue disorders and trauma, with inflammatory arthritis much less common (De Inocencio, 2004). In a familiar story, GP trainees report poor confidence and skills in assessing and documenting the musculoskeletal system in children (Foster, Everett and Myers, 2005), which has led to the development of a validated paediatric locomotor system screening examination, the pGALS (Foster et al,

2006). Future MSK training courses could include paediatric MSK problems, with a structure based on management issues encountered in primary care. Polymyalgia rheumatic and giant cell arteritis, two important conditions that can lead to diagnostic uncertainty in the elderly, were not specifically included in the questionnaire. This could have been addressed with better piloting of the draft questionnaire to GPs outside the academic centre. Although not discussed explicitly, these conditions were mentioned in the MSK training course during the session on ordering and interpreting laboratory tests.

### **3.7.6 Limitations of the quantitative needs assessment**

As mentioned previously, the response rate to the questionnaire was suboptimal, and the database from which the GPs were contacted was a potentially biased sample, not the raw list of eligible GPs from the PCTs. Non-responders to the questionnaire were predominantly males, which could have biased results. Although the questionnaire obtained data on previous training and CME in MSK disorders, more detail would have helped gain more information on the timing and nature of these experiences. More rigorous piloting would have highlighted lack of clarity in some areas of the questionnaire.

## **3.8 Conclusion**

This chapter has described the development, delivery and evaluation of a needs-assessment questionnaire to understand GPs experiences in learning to manage MSK disorders. GPs rate knowledge of MSK disorders as important, but postgraduate training and continuing medical education in MSK disorders is

variable and unstructured. The next chapter will describe the qualitative aspects of the needs assessment, and how the results were combined in order to inform the content of an MSK training course.

## **Chapter 4: A case study to assess GP learning needs in musculoskeletal disorders. The qualitative study**

### **4.1 Chapter summary**

This chapter describes the results of individual interviews with four GPs. Thematic analysis shows that GP education in managing MSK disorders is suboptimal, MSK problems are prevalent in local practice, educational interventions need to be focused on actual GP needs and involve small groups and patients. GPs value their role as gatekeepers and long-term carers of their patients with MSK disorders, in partnership with secondary care.

### **4.2 Introduction**

Chapter 3 described the quantitative results of the needs assessment showing that GPs in Camden and Islington PCTs have had little substantive postgraduate training in managing MSK disorders, and that continuing medical education interventions are mainly in the form of lectures. Chapter 4 will describe the rationale, methodology and results of the qualitative aspects of this case study, using face-to-face interviews to investigate GPs' learning needs in managing MSK disorders.

### **4.3 Methods**

#### **4.3.1 Aims of the qualitative needs assessment**

The aims of this section of the thesis were to understand the journey taken by GPs in becoming able to manage MSK disorders, exploring in more detail their

experiences in postgraduate training and established practice, in order to obtain more detail about the factors affecting GP management of MSK disorders.

#### **4.3.2 Interview method**

Four in-depth, face-to-face and semi-structured interviews with GPs would give me a large amount of data that could be analysed in sufficient time to allow me to gain an understanding of their educational experiences in learning to manage MSK conditions, providing me with a conceptual framework to inform the structure and content of a training course. A small number of interviews would be consistent with case-study methodology. I chose the method of the semi-structured interview described by Gillham (2000) as having flexibility and structure. The same questions are asked of all participants in a similar timeframe using an interview guide. Supplementary questions may be asked to clarify areas not covered by the main questions that allows the respondent to describe and interpret their experiences rather than just report them, but also allows the researcher to have a guide for the general plan of the interview, ensuring that appropriate subject areas are discussed, allowing open questions and the ability of the researcher and interviewee to share experiences and pursue conversations arising from the questions in the interview guide.

#### **4.3.3 Interview guide**

The interview guide was prepared from my own reflections, data from the questionnaire, the literature and informal discussions with other practising GPs. As all my participants worked in a similar environment, I envisaged that all

questions would be relevant to their experiences and practice. The interview guide is shown in figure 4.1.

- GP individual interview guide**
1. Welcome, introduction and reason for interview
  2. Undergraduate training in rheumatology
  3. Postgraduate training in rheumatology
  4. Continuing medical education in rheumatology
  5. Importance of MSK disorders in primary care
  6. Opportunities and barriers to developing MSK skills
  7. Relationship with secondary MSK disease specialist
  8. Primary care role in managing patients with MSK disease

**Figure 4.1: Interviewer guide used in GP face-to-face interviews**

#### **4.3.4 Ethical approval**

Ethical approval was obtained in May 2003 as described in chapter 2.

#### **4.3.5 Participant selection**

I chose to use purposive, non-probabilistic sampling, a method where the researcher recruits specific people or groups that represent the context being studied. The sampling was also convenient as these GPs were local to my research base at the Whittington Hospital and more likely to attend (Bowling 2002).



From the questionnaire described in chapter 3, 38 GP agreed to be contacted for a further interview. I aimed to recruit 4 GPs by email or telephone. These 4 “typical” GPs came from Camden and Islington Primary Care Trusts from a mixture of small and large, teaching and non-teaching practices. GPs with a special interest in rheumatology (e.g. the GP with a specific postgraduate qualification in rheumatology) were excluded as I wanted to capture the experiences of a true “generalist”. If there was no response or the GP declined to be involved, I contacted another GP that fitted the profile of the group I wanted to study. Eight GPs (four men and four women) were approached in order to obtain the four potential interviewees. Table 4.1 shows the details of the participants who gave their written informed consent to be involved in the study after reading the information leaflet. All worked exclusively for the NHS.

<b>TABLE 4.1: DEMOGRAPHICS OF FOUR GENERAL PRACTITIONERS INTERVIEWED FOR CASE STUDY</b>				
ID number	Year Registered with GMC	Gender	Number in Practice	Teaching Practice
GP1	1974	F	6	N
GP2	1997	F	2	Y
GP3	1981	F	4	N
GP4	1970	M	8	Y

#### **4.3.6 Interview structure**

Each interview took place in a quiet room in the Academic Centre for Medical Education between September and October 2003. The room was set up informally with 2 chairs. This was an environment in which local GPs come regularly for postgraduate meetings, so would not be totally unfamiliar. I decided

that by coming to the research centre, GPs would not be distracted by phone calls or other interruptions from colleagues and staff. The disadvantage was that they may have felt less secure in an unfamiliar environment, and that it could affect the interview relationship, by altering the balance of power in my favour. I do not feel this happened in practice.

A friendly, non-threatening atmosphere was created by welcoming the participant to the research centre, and acknowledging how appreciative I was that they had given their valuable time to come and be interviewed. I offered reassurance that the interview was to gain information about their experiences, and that there was no “correct” answer to my questions. The purpose of the interview was explained, and the participant had an opportunity to ask questions, and could terminate the interview at any time with no reason needing to be given. It was clarified that the interview would be audiotaped to enable later transcription and analysis. Confidentiality was emphasised. No participant would be identified by name or site of practice in any written work arising from the project. I explained that each interview would last approximately 45 minutes, but that we would talk as long as we wanted to. Fontana and Frey (1998) state the importance of gaining trust and building rapport with interview participants.

Interviews were audiotaped using a hand-held dictaphone (Guilbert Pocket Memo 3000, Andover, Hants, UK) and individual 60-minute mini-cassettes for each interview.

### **4.3.7 Transcription of data**

I transcribed each interview in the first instance. Each interview took a minimum of four hours to transcribe, and was important for me to become fully engaged with the audiotape material as it was being typed. After ensuring each transcription was as complete and accurate as possible, an independent transcription of the interviews was also carried out, by a member of administrative staff at the research centre. I then compared them, looking for areas of difference and then referring back to the audiotapes to hear what actually occurred. The final transcript was then produced. It was important to refer back frequently to the audiotape to clarify meanings from the text as the text cannot give information about the non-verbal features of the interaction e.g. laughter, intonation, speed of speech. Once all interviews were transcribed, I performed an initial read-through of all the material in order to prepare for full thematic analysis. The total time involved in moving from audiotape to final transcript was six-eight hours for each interview. The full transcripts are contained in Appendix 2.

### **4.3.8 Thematic analysis**

The transcripts were read individually and together to identify themes, or categories (common subject areas) arising from the interview questions. Written notes were made on the transcripts, highlighting data that helped define or illustrate the category. Each category was coded alphanumerically. A Microsoft Excel spreadsheet was created, showing a matrix where each participant had contributed data to each thematic category. This coding was written on the

corresponding part of the transcript. After this initial analysis, the categories were reviewed, combining them if necessary to produce broader categories. These categories were then used to derive a framework about GP education and experience in managing MSK problems.

#### **4.4 Results**

This section summarises the process through which thematic categories arising from the interviews were derived, how these themes relate to the literature and how they gave meaning to the development of a training course. Examples of how individual pieces of data were used to help define sub-categories, and how these came together to form broader categories are shown. This will provide the reader with sufficient transparency about the data analysis process to enable them to decide the transferability of the findings to their own or other practice. Participant speech is in bold text. Table 4.2 shows the categories and sub-categories that emerged from analysis of the data:

<b>TABLE 4.2: THEMATIC CATEGORIES EMERGING FROM GP INTERVIEWS</b>	
<b>Category</b>	<b>Sub-category</b>
<b>Learning to manage MSK conditions</b>  <b>Utility of CME activities</b>  <b>Confidence in managing MSK disorders</b>  <b>Role of GP</b>	<ul style="list-style-type: none"> <li>• Preparation for practice as GP</li> <li>• Modes: <ul style="list-style-type: none"> <li>○ self</li> <li>○ peers</li> <li>○ patients</li> <li>○ specialist/MDT</li> <li>○ courses</li> <li>○ examinations</li> </ul> </li> <li>• Content <ul style="list-style-type: none"> <li>○ rare vs. common</li> <li>○</li> </ul> </li> <li>• Theory-practice gap</li> <li>• Patient benefit <ul style="list-style-type: none"> <li>○ care for the “whole” patient</li> <li>○ better use of resources</li> <li>○ GPs as gatekeepers</li> </ul> </li> <li>• Care of complex patient with physical and psychosocial problems</li> <li>• Relationship with secondary care</li> </ul>

#### **4.4.1 Theme 1: Learning to manage MSK conditions**

Given the nature of my inquiry, this was the largest theme arising from my analysis.

##### **4.4.1.1 Preparation for practice as a GP**

Postgraduate or vocational training in rheumatology was variable and depended on them identifying it as a learning need during their training. Vocational training did not seem to prepare GPs to manage the significant proportion of their workload that comprises MSK problems.

**“..I did my own training scheme for general practice and my medical jobs were all very much cardiology, respiratory etc so I didn’t do rheumatology as a job per se.”**

**GP 4**

**“...you are suddenly in general practice confronted with loads of things you don’t know about...there are always things you may not have done like eyes, skins and rheumatology, all those subject seem to come up.”**

**GP 4**

**“In the vocational scheme that I did, which was a very long time ago, I don’t think we did a lot of rheumatology.”**

**GP 1**

**“ I don’t think we got very much training in rheumatology**

**GP 3**

GPs confirmed that MSK disorders comprise a significant proportion of their workload.

**“It’s a lot, you know with back pain, knee pain and the rest of it. I would say maybe 15%.”**

**GP 3**

**“Oh, a lot...as much as 25% or something, maybe more with all the back pains.”**

**GP 4**

**“ of the ten patients I saw today, two had problems with their joints....everyday something will come in – a knee, an elbow, osteoarthritis.”**

**GP 2**

#### **4.4.2 Theme 2: Continuing education**

Participants used a combination of personal sources to learn about management of MSK conditions. Peer learning from other GPs in the practice, self-directed learning, the patients themselves and hospital specialists. The methods seem opportunistic, based around a patient with a particular problem. Postgraduate exams such as the MRCGP, that contained questions on rheumatology provided a driver for learning.

**“postgraduate meetings in our practice, asking questions that you don’t know the answer to, to provide a supportive environment in which it is alright to admit you don’t know what to do with osteoarthritis of the knee...”**

**GP 1**

**“self-taught, looking up things you don’t know, talking to colleagues...one of my partners here has quite a lot of experience in rheumatology. Occasionally you ring up the rheumatologist about a patient, that’s quite educational on the whole”**

**GP 4**

**“...seeing them and learning from things that have worked for other patients, you apply it to others...”**

**GP 3**

**“ I did the MRCGP that had some questions on rheumatology which was quite useful and reminded me about a lot of common problems.**

**GP 2**

All respondents said that small group, case-based, problem (or symptom)-based approach was the best way to learn. The GPs were very open to learning from patients, specialists and the multi-disciplinary team. In contrast to these studies however, lectures were seen as useful as part of a spectrum of delivery of education, rather than the only method. GPs wanted the course to reflect the

common things that they see, rather than rare, complex conditions, on which specialists often base their teaching.

**“ ..quite a lot of hands-on, practical stuff, maybe even seeing patients. Multidisciplinary too, learning from the physio..”**

**GP 4**

**“certainly not a training course that is all lectures, because then you just tend to sitting around passively absorbing it....very hands-on, practical, we could all bring difficult cases.**

**GP 3**

**[ regarding lupus] “..It is important to be able to recognise those, but we do not really need to know a lot about them.”**

**GP 3**

**[regarding connective tissue disease] “... I think you need to have an idea of it, perhaps with a lecture to remind you....not in-depth management of something you see so rarely.”**

**GP 2**

**“I think [a training course] would help me to do more...there is more I could do at a local level..[with] shoulders and things like that.”**

**GP 3**

A recurring theme was using outreach clinics as educational tools. The GPs interviewed felt that outreach clinics in which they could “sit-in” with the specialist would be useful to help improve their confidence and skills. Such a system was already in place at a partner surgery to that of GP4. Despite this, GP4 did not find it possible to make time to attend these clinics due to pressure of work.

**“ I haven’t done [sit on in outreach clinics]. I don’t think the others [doctors] have .**

**GP 3**



**“ I think it is a good idea, especially with an elderly population. You could go and talk to them [the specialist] about cases you may be worried about and you have ease of access.**

**GP 2**

**I think that [outreach] can be very informative ...but it's just time constraints mean you can't keep running off, sitting in a rheumatology clinic, I am not sure how useful that is.”**

**GP 4**

#### **4.4.3 Theme 3: Confidence in managing MSK disorders**

The overriding theme arising from this question was the difficulty of applying knowledge to actual practice. The key issue was to follow this up with regular experience in the GP clinic, which was variable depending on case-mix.

Confidence in injection would then reduce over time and the GPs would refer on to secondary care on a primary care colleague with a special interest.

**“ [ at courses] you learn how to examine joints and you forget fairly quickly. I don't know how to interpret the findings..”**

**GP 2**

**“...it is the examination and following it through yourself so that you do not have to refer on which is lacking”**

**GP 2**

**“ I have been on a lot of courses to develop practical skills. Actually, I am not sure that courses are brilliant at teaching you.....some people are very good at seeing a diagram of a shoulder and then injecting one, but I think you really have to have a practical approach...I am not confident in examining joints.”**

**GP 1**

**“ [ joint injection] models are really helpful, but I don't think it's made me feel confident to start doing it again. I would like to participate in a joint injection clinic...to get practical experience.”**

**GP 3**

#### **4.4.4 Theme 4: GP role**

All GPs reported good relationships with the hospital specialists. Communication by letter or telephone worked well. Interestingly, all GPs felt that they acted well as “gatekeepers”, only sending a small proportion of patients with MSK problems for a secondary care opinion (GP 4 referred very few patients with back pain to secondary care, for example). They wanted to maximise patient care in the community, and a training course would potentially give them more confidence to do this. The GP identity of looking after the whole patient came through strongly in the interviews.

**“ [ a training course would benefit] if one can say with confidence that you know what is going to happen and what is wrong...that rubs off on the patient who is then happy with your explanation.”**

**GP 1**

**“ sometimes [it is about] referring to a specialist [for] a laying on of hands. Even though you know it is jolly useless to change the course of disease, it changes how the patient sees the problem.”**

**GP 1**

**“ we get a very good service from [the hospital specialist]...they respond to letters very well.**

**GP 3**

**“We tend not to refer many to rheumatology, we may ring up for advice rather than transfer.”**

**GP 2**

**“with rheumatology they are always accessible and easy to get hold of and easy to discuss something with them.”**

**GP 4**

**“ As general practitioners we are very well placed to know some of the other issues in people’s lives and how it affects them.”**

**GP 3**

The management of complex patients with physical and psychosocial problems was stated by GPs as an area that they found challenging. A common name for patients with these complex problems is the “heartsink patient”, and this nomenclature was used by GP 1 specifically. Several GPs stated that education on approaches to help them improve these patients’ quality of life even in a very small way would be useful, although they understood that complete resolution of the problems would not be achievable.

**“ [Rheumatology] can be endlessly frustrating ....because there is a great big core of people for whom you can do nothing, and yet they still come back and tell you that they are troubled and would like something to be done and you can do nothing, learning how to manage that, a psychology course would be useful.”**

**GP 1**

**“chronic disease management and how to engender a positive attitude. [The arthritis Care programme] is really good. It saves the patient being a kind of heartsink patient, because patients with chronic degenerative disorders are often seen as heartsink patients.....some sort of cognitive behavioural technique to teach your patient how to put up with chronic illness would be really good.**

**GP1**

**“I think a lot of these people [with musculoskeletal problems] have had chronic problems which are, you know, there isn’t any point in seeing a specialist because there isn’t nay more that can be done than what you can do here in the community. I think it would be nice to have more facilities for them.”**

**GP4**

#### **4.4.5 MSK disorders frequently mentioned by GPs**

From the transcripts, the frequency with which different joints and MSK conditions were mentioned, either as a word or included in a phrase/theme of discussion was calculated by identification from the transcripts. The results of

the most frequently mentioned are shown in table 4.3. The shoulder, back and knee were mentioned most frequently (19, 12 and 16 instances respectively). Joint injection was mentioned 14 times, osteoporosis 11 times and osteoarthritis was mentioned least at 6 times.

GP number	Back	Knee	Shoulder	Osteoarthritis	Osteoporosis	Joint injection
1	4	4	6	2	6	3
2	3	7	6	4	3	6
3	3	5	5	0	2	3
4	2	0	2	0	0	2
<b>Total</b>	<b>12</b>	<b>16</b>	<b>19</b>	<b>6</b>	<b>11</b>	<b>14</b>

## **4.5 Discussion**

### **4.5.1 Interview methodology**

This chapter has described the methods and results of the qualitative aspect of the needs-assessment case study using semi-structured, face-to-face interviews with four GPs from Camden and Islington PCTs. Kvale (1996) describes interviews as:

"...attempts to understand the world from the subjects' point of view, to unfold the meaning of peoples' experiences, to uncover their lived world prior to scientific explanations." (Kvale, 1996)

Gillham (2005) describes a spectrum of interview styles. The structured interview, with a neutral researcher, using an interview guide with set questions asked of each respondent would be more suitable for a quantitative study, and would not provide me with the type of data I wanted. At the other extreme is the

unstructured interview, which would not guarantee that all important themes were discussed in the interview. The semi-structured interview provided a good compromise. Individual interviews have been used successfully in educational needs assessments (Crandall, 1998). In a study by Sugg and Inui (1992), where 38 primary care physicians were interviewed individually around the subject of domestic violence, Crandall estimated a minimum transcription and analysis time of 190 hours, or five hours per participant. As I would be transcribing interviews myself, large amounts of data would be impractical to transcribe and analyse. A small number of individual interviews allowed me to obtain rich, in-depth data. The interview time of up to 60 minutes allowed sufficient time to collect rich data without being overwhelmed by data that would be difficult to transcribe within the time of the project. The interview approach, although used within a case study context, was similar to methodology used in other qualitative methodologies described in section 2.5. Group interviews were considered but not used due to the concerns about recruiting sufficient GPs who could attend at the same time to make the group interview valid and whether GPs would feel able to discuss openly issues regarding their management of patients with MSK disorders.

#### **4.5.2 Thematic analysis**

The qualitative comments mirror those found in the questionnaire survey, with GPs inadequately prepared via under-or postgraduate training to manage MSK conditions. From the interviews, GPs confirmed that musculoskeletal problems formed a significant part of their GP workload, estimating a prevalence of up to

20%. This figure is consistent with data in the UK from the Musculoskeletal Services Framework (see section 1.12.3) and from North America (Rosenblatt et al, 1982). The GPs learned from a variety of sources, though none had a dedicated rheumatology job. Self-education from previous patient management decisions is common, as is peer education by discussion with GP colleagues. Formal postgraduate examinations (the MRCP) were useful in gaining knowledge. The GPs interviews concur with the data on CME (Badley and Lee, 1987, Davis et al, 1995) in that they want case-based small-group events. Outreach clinics were mentioned frequently in the interviews. These are clinics based in primary care that utilise the experience of the hospital specialist, either working with the GP or on their own. A UK study by Bowling and Bond (2000) comparing outreach and hospital based specialist clinics found that outreach clinics resulted in increased patient satisfaction, reduced waiting times and clinic visits, and higher discharge rates. There was no significant impact on health status. NHS costs per patient treated were higher in outreach than hospital clinics, which was a surprising finding. Black et al (1997) showed that interaction between GPs and specialists during outreach clinics was poor, even if the reason behind the clinic being developed was for GPs and specialists to improve communication. Reasons for this included time pressures and some GPs feeling that sitting-in was inappropriate. Despite GP enthusiasm, time pressures and financial cost prevent them being used more widely. Similar results are found in outreach interventions such as academic detailing, which has a teaching rather than service focus, and is described in more detail in chapter 6. A more effective

methodological approach would be to improve the skills and knowledge of all GPs to manage MSK disorders, removing the need for a joint consultation. The “theory-practice gap” found in theme 3 has been found in several studies looking at the impact of educational interventions (Davis et al, 1999, Kennedy et al, 2004), where there has been an increase in knowledge but little impact on clinician behaviour. In the interviews, this was an issue with GPs, especially with regard to joint examination and joint injection. The injection models were seen to be satisfactory, but the key point was to follow this up with regular experience in the GP clinic, which was variable depending on case-mix. Confidence in injection would then reduce over time and the GPs would refer on to secondary care or a primary care colleague with a special interest. This interview data correlates well with a study looking at comfort scores of physicians attending a 2-hour joint injection practical skills course (Jolly et al, 2007). Predictably, perceived comfort with injection techniques was significantly higher than at baseline. After 10 months, the comfort scores had reduced, though were still higher than baseline.

The GPs identified strongly with their roles as efficient gatekeepers and carers of patients in the long term. This is in contrast to hospital specialists who often feel that GPs refer too many patients. Grace and Armstrong (1987) found 55% of hospital specialists felt that GPs could have done more before referring the patient. Samanta and Roy (1988) claimed that many referrals to rheumatology specialists were unnecessary. However, the reality is more complex; the reasons for referral are variable, ranging for requests for investigation, diagnosis

or treatment, or reassurance for the patient (O'Donnell, 2000). With the government drive to move more care into the community, the data fits with policy. Other authors feel that the role of the GP as gatekeeper has eroded slowly as they are not the only "first port of call" for healthcare advice, due to a number of factors including the emphasis on health promotion and prevention and changes in opening hours and emergency cover (Cox, 2006). It is important that GPs reclaim this role, as they have the pivotal role to play in determining patient care pathways for in the new models of community healthcare describes in chapter 1.

GPs understood the difficulties in managing heartsink patients with musculoskeletal problems. Heartsink patients are described by O'Dowd (O'Dowd, 1998) as those causing frustration and feelings of passivity and negativity towards the patient due to a number of factors such as frequent attendance with multiple symptoms, dissatisfaction with the services provided for them. This negativity can spread to other members of the medical or clerical staff, so worsening the patient's experiences of healthcare provision. O'Dowd found that in primary care, a simple approach of a group discussion of the patient's case - highlighting the physical and psychosocial problems - and development of a management plan helped the GP develop a more positive approach to the patient's care. This approach, moving to a more patient-centred model of care, empowering the patient to manage their symptoms in the context of their psychosocial problems, was stated by the GPs to be a useful addition to a training course.



### **4.5.3 Triangulation**

In this case study, the process of triangulation was demonstrated by using the questionnaire data, annotated transcriptions of the interviews, audiotapes of the interviews, my personal reflections and data from the literature in order to reach meaningful conclusions. For example, the questionnaire highlighted that few GPs had had formal postgraduate training in learning to manage MSK conditions. This was confirmed in the interviews, with GPs stating that their vocational training did not prepare them for the significant MSK workload seen in primary care. A “negative case” was also seen comparing the interviews to the data in the literature regarding the utility of lectures as a CME intervention. The GPs felt that lectures were an acceptable modality as long as it was used in moderation. In contrast, the literature is fairly negative about the efficacy of lectures in CME.

An ethnographic aspect to data collection would have provided another source for triangulation. The author did in fact visit several GP practices as part of learning sets, where groups of local GPs met to discuss difficult cases use this as a basis for their learning. These meetings were not audiotaped or analysed so the data could not be included in this chapter, but in future research in this subject, a “field work” aspect to data collection would be vital.

### **4.5.4 Generalisability**

The question arises as to the transferability of the data. I think that the triangulation of the data with the literature allows us to say that the findings are potentially transferable to other healthcare areas in inner London with a similar

patient demographic. It would be more difficult to say that the data would transfer in its entirety to other urban centres or rural practices. However, the aim of this case study was to provide information for the development of a training course for local GPs, so transferability becomes less of an issue. A fuzzy generalisation (Bassey, 1999) would be that the findings *may* be applicable to other settings. Generalisability was increased by studying the “typical” (Schofield, 2000), but even this has its problems because what is typical in one context, may not be in another. By providing a full description of the processes and theory behind the development and evaluation of the needs assessment -“thick description” (Geertz, C, 1973, cited in Schofield, 2000) - it gives the reader all the information needed for them to reach their own conclusions as to the validity and generalisability of the data.

#### **4.5.5 Use of computer software to aid qualitative data analysis**

Computer software is available to analyse qualitative data, such as NU.DIST and NVivo). I felt that with the small number of detailed interviews carried out, the use of software would distance me from the data, and would take me more time to extract important themes. For this reason, qualitative data was analysed manually.

#### **4.5.6 Impact of the researcher on the research process**

Mays and Pope (2000) call this “reflexivity”, and has been described by Malterud (2001) as:

“A researcher's background and position will affect what they choose to investigate, the angle of investigation, the methods judged most adequate

for this purpose, the findings considered most appropriate, and the framing and communication of conclusions" (Malterud, 2001)

The researcher must understand how their prior experiences, personal and professional biases and the relationship between researcher and subject can affect the research process at all levels, from design, data collection to analysis and interpretation.

It was an exciting challenge to learn the new paradigms and ways of thinking required in a qualitative approach, a methodology that had not been taught at all in my undergraduate or postgraduate training. The quantitative approach using questionnaires was more familiar. As a specialist trainee in rheumatology in secondary care, who has developed my own positive ideas and perceptions of GPs ability to manage MSK problems from personal experience - countered by frequent negative perceptions from hospital colleagues - I was concerned that that this would affect my relationship with the GPs who may perceive me as judging them, their training and ability to manage musculoskeletal problems. Indeed, perhaps GPs were perfectly able to manage MSK problems and the project hypothesis was based on secondary care perceptions that were erroneous! As a trainee, would GPs see me as "qualified enough" to be asking them questions about patient management? I think this may have occurred with one GP, when at one point I was not sure who was interviewing whom. However, that experience was invaluable when conducting further interviews and running the training course. Listening to the audiotapes, I am surprised at how much I may have influenced the conversation, and therefore the data. I was initially

concerned about this, but came to see it as a very useful process, blurring the boundaries between researcher and participant.

#### **4.6 General conclusions arising from both components of the needs assessment**

This case study using quantitative and qualitative methodology aimed to understand the journey GPs took when learning to manage patients with musculoskeletal problems, and their learning needs. The case study used “typical” GPs from the Camden and Islington Primary Care Trusts, the local Trusts to the research centre. Data from both needs assessment studies confirmed the proposition that local GPs feel rheumatology is a subject in which formal training has been poor but it is an important area for continuing medical education. The data agrees with the literature in that GPs would like to learn rheumatology “in-context” i.e. that the learning should be relevant to what MSK conditions they actually see, and delivered in a way that allows interaction. Learning in this environment can help to bridge the theory-practice gap, by allowing GPs to continue to apply their learning frequently and effectively in surgeries. The content of the training courses has been refined from the needs assessment, concentrating on common symptoms such as back, knee and shoulder pain; and common conditions such as osteoarthritis and osteoporosis. Small group interactive workshops are preferred, with the opportunity to work with real patients. This latter point will be expanded in the next chapter, which describes the development of a training programme for patients with back pain to teach medical students and then GPs.

# **Chapter 5: Patients as educators: The development of a Patient Partner programme to teach medical students and general practitioners**

## **5.1 Chapter summary**

This chapter describes the successful development and delivery of a patient partner (PP) teaching programme to medical students. This programme was essential to prepare the PPs with the appropriate confidence and skills to work with more experienced doctors such as GPs as part of a training course that will be described in chapter 6.

## **5.2 Introduction**

In chapter 1, the burden of the common chronic musculoskeletal disease was described. UK health policy now emphasises patient education by health professionals as an integral part of patient care. In the needs assessment, local GPs in north London felt that a needs-based training programme in MSK disorders should be based on what GPs actually see in their practice, with an emphasis on back, neck and soft tissue disorders, osteoporosis, osteoarthritis and learning from patients where possible rather than in an abstract context.

The use of real patients in educational interventions would seem to have advantages for the patient and learner, and patients with chronic MSK disorders provide a stable population from which to recruit potential educators. From chapter 1 (section 1.10), using patients as educators would facilitate experiential

and reflective learning, and increase the chances of a change in behaviour or practice.

This chapter will review the literature on the utility and efficacy of patients as educators, and describe the rationale behind training patients with back pain to teach undergraduate students at Royal Free and University College Medical School and subsequently, GPs in Camden and Islington PCTs, the latter forming part of the MSK training course. This data has been published in a peer-reviewed journal (Haq, Fuller and Dacre, 2006)

### **5.2.1 Rationale behind the development of a programme for PPs with back pain**

As described in chapter 1, back pain is a significant health issue (section 1.7). Despite its prevalence, students and trainees may not be exposed to it as the majority of patients are seen in outpatients or the community. Satisfaction with treatment in the community is also low (Schers et al, 2001). Therefore back pain makes an ideal condition in which to develop a PP programme. The Department of Health is promoting empowerment of patients with chronic disease via its Expert Patient programme, which encourages patients to become a key decision maker in decisions regarding treatment in order to reduce pain and enhance quality of life (Department of Health, 2007). The following sections describe the PP training programme, details of the teaching intervention, and evaluation by the PPs and students.

### **5.2.2 Objectives of the PP with back pain programme**

1. To evaluate the feasibility of recruiting and training patients with back pain to teach medical students and eventually GPs.
2. To assess the effect of the PP teaching on the student skills in history taking and examination, and performance in a summative practical examination (OSCE) on back pain.

## **5.3 Methods**

### **5.3.1 Patient recruitment**

Patients were recruited from the rheumatology outpatient clinics of the Whittington Hospital NHS Trust between September and October 2001. Full ethical approval was obtained from the Whittington Hospital NHS Trust Local Research Ethics Committee in September 2001 (reference number 2001/27). Leaflets and posters were displayed in public areas. The leaflet described the outline of the project and invited volunteers to contact a member of the research team for further details and a screening interview. Inclusion/exclusion criteria are shown in table 5.1

<b>TABLE 5.1 INCLUSION AND EXCLUSION CRITERIA FOR PARTICIPATION IN THE PP WITH BACK PAIN TRAINING PROGRAMME</b>	
<b>Inclusion Criteria</b>	
Over 18 years old	
Willingness to teach	
Able to attend all training sessions and subsequent student teaching sessions	
Current or previous episodes of mechanical low back pain, with or without nerve root compression symptoms	
<b>Exclusion Criteria</b>	
Significant pain that would limit ability to attend training and teaching	
Current or previous history of malignancy	
Adverse psychosocial factors	

Several suitable patients with mechanical back pain and no nerve root compromise were unable to take time off work to attend the training sessions. It was then decided to allow patients with inflammatory spinal disease to be eligible for the programme. By the end of October 2001, 4 patients had been recruited. Patient demographics are shown in table 5.2

<b>TABLE 5.2: DEMOGRAPHICS OF PATIENT PARTNERS</b>	
Male	3
Female	1
White Caucasian	2
Asian	2
In employment	2
Mean age (range)	45.5 years old (29-56)
Ankylosing spondylitis	2 (both male)
Mechanical back pain	2



Of the 2 patients with mechanical back pain, both intermittent sciatic symptoms, one had been treated conservatively (male) and the other had had surgery in the past (female).

### **5.3.2 PP Training Programme**

This took place in the Clinical Skills Centre at the Whittington Hospital NHS Trust in November and December 2001. Content was based on the learning outcomes contained in the undergraduate curriculum of the Royal Free and University College London Medical School. Training was delivered by the research team, containing rheumatologists and educationalists from the Academic Centre for Medical Education (ACME). Small group interactive workshops and seminars were used for the 2 full day and 4 half-day training sessions, the structure of which is shown below

#### **5.3.2.1 Days 1 and 2 (Full days)**

- A short focus group interview to understand the PPs ideas of what they wanted to achieve by taking part in the programme.
- A teaching skills workshop, based on the successful Teaching Improvement Project System (TIPS) courses run by ACME. These workshops covered preparation for teaching, techniques to enhance delivery of teaching, and principles of giving feedback.
- A clinician-led seminar on the causes of back pain.
- How to perform a basic locomotor examination, The Gait, Arms, Legs and Spine screen (Doherty et al, 1992), a widely used and validated tool. PPs

had the opportunity to practise on each other and watch a video demonstrating the complete examination.

- The structure of a clinical history. This seminar summarised the approaches used when a doctor is taking a history from a patient, discussed the similarities and differences from the patient viewpoint. Non-verbal communication, empathy and rapport and the concepts of open and closed questions were explained.
- At the end of day 2, PPs delivered a 5-minute presentation on a topic of their choice that had been covered during the first 2 days. Constructive feedback on their performance was given by the other PPs and the project team.

#### **5.3.2.2 Days 3-6 (Half-days)**

- Revision of content from days 1 and 2
- Basic spinal anatomy, surface anatomy of spinal landmarks, dermatomes, myotomes, reflexes and the “straight leg raise” /sciatic nerve stretch tests.
- The concept of “red flags” in back pain, and their significance to immediate management.
- Non-medical therapies for back pain. This took the form of an interactive discussion on the spectrum of therapies available, patient experience of these therapies, and the attitude of medical professionals to them. The therapies covered were physiotherapy, pilates, reiki, acupuncture and other complementary therapies, all of which had been tried by one or more PP.

### **5.3.2.3 Day 6 (Half-day)**

- PPs acted as examiners in a formative 4-station Objective Structured Clinical Examination that was taken by volunteer medical students who were attached to the rheumatology firm at that time. The stations covered history taking and examination in back pain. PPs gave students immediate feedback on their performance.
- A short questionnaire looking at what they had gained from the training course and how confident they felt to start teaching medical students.

Unfortunately, just as the teaching was about to start, one PP (male with ankylosing spondylitis) had to withdraw due to personal and work commitments. The remaining three PPs took part in the teaching programme.

### **5.3.3 PP Reimbursement**

PPS were paid an honorarium of £10 for each visit for training or teaching, together with refunding of travel expenses.

### **5.3.4 Medical student teaching**

Rheumatology and orthopaedic teaching took place over 5-weeks in year 3 of a 6-year MBBS medicine course at Royal free and University College Medical School. Teaching occurred on 3 campuses from September to July. The Whittington Campus was chosen as the site for the PP teaching as it was

convenient to patients and the site of academic department of medical education. Details of the standard and PP teaching programme is described below.

#### **5.3.4.1 Standard teaching**

This was given to all students (those who did and did not receive PP teaching in addition). The 5-week block contained 12-15 students, and allocation to these groups was random. During the 5-week block, students were required to attend outpatient clinics, where they were able to take histories from and examine patients with a variety of MSK disorders including back pain. Weekly clinical skills sessions took place weekly in the Clinical Skills Centre, facilitated by consultants or trainees, allowing the students to examine each other. Weekly student –led seminars, with consultant supervision) covered inflammatory arthritis, osteoarthritis, connective tissue disease and crystal arthropathy.

#### **5.3.4.2 PP teaching**

PP teaching started in January 2002, and initially took place in weeks 2 and 4 of the 5-week block, instead of the weekly seminars. Each session lasted 75 minutes, and was given to alternate groups of students, so that the effect of the teaching on OSCE performance could be studied. After student and PP feedback, the two sessions were combined to form a whole morning of PP teaching.

In teaching session 1, students were divided into 2 groups. One group would take a history from 2 PPs, with immediate feedback from the PPs and rest of the students. The other half of the students would perform a GALS screen, straight

leg raise and sciatic/femoral nerve stretch tests on the 3<sup>rd</sup> PP, again with immediate feedback on their performance of the skill and interpersonal/communication skills with the patient. Members of the clinical team were available at these sessions as facilitators if the PP asked for help.

In teaching session 2, all three PPs led a seminar discussing non-medical treatment of back pain, focusing on the role of physiotherapy, exercise and complementary therapies. A video was produced by the research team with the PPs and a senior physiotherapist from the Whittington Hospital NHS Trust, which included a discussion between the therapist and PPs on back care advice and a demonstration of cores stability exercises. This video was shown to the students, with an opportunity for them to practise core stability exercises as shown on the video, using a “Swiss Ball”, an inflatable sphere used widely by therapists and gymnasia to help develop core muscle strength. Figure 5.1 shows Patient Partner B demonstrating the GALS screen with a student.



**Figure 5.1: A demonstration of the GALS screen by Patient Partner B**

## **5.4 Evaluation methods**

### **5.4.1 Patient Partners**

Free text questionnaires and group interviews were used to assess PP views on the initial training programme and the student teaching. All interviews were recorded and transcribed by Mrs Joan Fuller, a research nurse. I then listened to the tapes and transcriptions together and made amendments as needed to ensure the transcript was accurate.

### **5.4.2 Medical Students**

Students completed questionnaires before and after the PP teaching. The pre-teaching questionnaire asked the students to rate their abilities in history taking

and communication skills using a 5-point Likert scale. The post-teaching questionnaire asked the same questions but also asked them to evaluate the utility of the PP teaching, using free text in addition to a 5-point Likert scale. A random group of 10 students from the whole group that had received PP teaching was selected to take part in a focus group to gain more qualitative information on their evaluation of the teaching. The focus group was recorded and transcribed in the same way as the PP focus groups above.

### **5.4.3 Student examination performance**

All 360 year 3 students completed a summative Objective Structured Clinical Examination in July 2002, that took place over 2 days on all 3 medical school campuses. Stations covered history taking, examination, data interpretation, practical and communication skills in medicine and surgery. One station examined history taking in a young male patient presenting with back pain and symptoms suggestive of ankylosing spondylitis. The student score (in %) in this station, and the overall examination score was compared in the intervention and non-intervention groups only, not the year 3 cohort as a whole. The pass mark for the OSCE was derived using a modified Angoff Method, a validated and widely used method of criterion referencing (Hambleton, 2001).

### **5.4.4 Quantitative and qualitative data analysis**

All examination scores and questionnaire data were analysed using the Statistical Package for Social Sciences version 11.5 (SPSS® for Windows®, SPSS Inc, Chicago, IL, USA). For the examination score data, a p-value of <0.05 was taken

to be statistically significant. The questionnaire data was studied using non-parametric methods with corrections for multiple testing, and a p-value of <0.006 was taken to be statistically significant.

Qualitative data was analysed using standard methods used in chapter 2. The data was transcribed and examined for emergent themes. The data was analysed by two investigators to ensure validity of the results. No computer software was used in the qualitative analyses.

## **5.5 Results**

60 students received the PP teaching between January and August 2002.

54/60 student questionnaires were suitable for analysis (90%). All PP questionnaires were analysed.

### **5.5.1 PP pre-training programme questionnaire**

Themes that emerged from the free text and interview data were consistent. PPs wanted to help students gain a better understanding of the lived experience of being a patient with back pain, and to apply this understanding to patient management, taking into account both medical and psychosocial issues. The PPS wanted to improve their interpersonal and communication skills and share experiences with other back pain sufferers. A common theme from the data was PP anxiety about having to lead the encounter, teach and answer questions from students, whom they perceived as knowing more than them. This was an important theme to address as the next stage for the PPs was to facilitate teaching with GPs.



### **5.5.2 Post –training evaluation**

PPs felt that their knowledge of the causes and treatment of back pain in general, and their own condition, had increased. Confidence in their ability to teach students had increased from a median of 3.0 to 4.0, using a Likert scale where 1= not at all confident and 5= very confident.

### **5.5.3 Effect of PP teaching on student consultation skills**

Table 5.3 summarises the mean and median student values to the responses to the anchor statements in the pre- and post-teaching questionnaires. The only domain in which there was significant change was in eliciting information. In the 5-point Likert Scale, 1= not at all confident, 5= very confident. Data was analysed using the Wilcoxon Signed Ranks test with correction for multiple testing.

<b>TABLE 5.3. EFFECT OF PP TEACHING ON MEDIAN (MEAN) INDICES OF STUDENT CONSULTATION SKILLS</b>			
	Pre-teaching	Post-teaching	p-value
Establishing rapport with a patient	4 (3.8)	4 (3.6)	NS 0.17
Finding an appropriate questioning style	3 (3.2)	3 (3.3)	NS 0.19
Listening to patient needs and concerns	3 (3.6)	3 (3.5)	NS 0.59
<b>Eliciting information</b>	<b>3 (2.9)</b>	<b>3 (3.3)</b>	<b>S</b> <b>0.001</b>
Presenting information in clear fashion	3 (2.9)	3 (3.1)	NS 0.12
Agreeing a course of action with patient	3 (2.7)	3 (2.9)	NS 0.04
Prioritizing problems	3.0 (2.8)	3.0 (2.7)	NS 0.08
Concluding an interview successfully	3 (3.2)	3 (3.3)	0.26

S= significant at  $p < 0.006$  due to correction for multiple testing  
 NS= non-significant

#### **5.5.4 Student evaluation of PP teaching: questionnaires**

A Likert scale questionnaire was used with 1=not at all useful and 5=very useful. The median scores are listed below in table 5.4. All of the PP teaching sessions in history-taking, examination, and non-drug management were rated highly by students.

<b>TABLE 5.4: STUDENT EVALUATION OF UTILITY OF PP TEACHING PROGRAMME</b>	
Domain	Median Score
usefulness of history-taking with feedback	4
usefulness of examination skills teaching	4
usefulness of non-drug therapies seminar	4
overall usefulness of this teaching method	4

### **5.5.5 Student evaluation of PP teaching: qualitative**

Several themes emerged from the focus group and free text comments:

Students found the environment safe and non-threatening. Immediate feedback on performance after history-taking was appreciated. There was more time to listen to patient experiences, and students became impressed at how much the PPs knew about their conditions.

Themes also emerged about improving the teaching. Students would have preferred more time to develop examination skills and an improved ratio of PPs to students. The learning experience was most valuable when both a PP and clinician were facilitating together. Students commented that the back pain PPs were less confident than other PPs they had encountered with rheumatoid arthritis. However, they appreciated that the RA group had been running for a

much longer period. Some students felt that the PPs were too rehearsed when recounting their histories, and all students would have liked more time with the PPs. Student quotes are shown in bold below to illustrate these themes.

**'The concept is good . . . you don't see people with back pain and sciatica on the ward.'**

**Student A**

**' . . . time to practise examination without time pressure, and nice to speak to someone who is happy to talk to students.'**

**Student B**

**' . . . relaxed way of learning, with less pressure than in the actual hospital setting.'**

**Student C**

**' . . . they give a more rounded picture of living with a chronic illness and are able to give us feedback.'**

**Student D**

**' . . . the [PPs] couldn't answer some of the medical questions, but it was OK because they were answered by Dr X.'**

**Student E**

### **5.5.6 PP Evaluation of student teaching**

As stated in the pre-training data, PPs felt anxious about having to answer questions from students. In practice this was not a problem as expert clinical teachers from the rheumatology department were available to answer questions as needed. The number of times that PPs needed help facilitating a session reduced as the number of teaching sessions increased.

Analysis of the focus group data showed that PPs were surprised about how little students knew about back pain considering it was such a common problem.

PPs felt that students felt more comfortable asking factual questions about the back pain than the psychosocial impact.

PPs felt better able to self-manage their symptoms after being involved in the programme, and felt able to provide advice to friends and family who had experienced pain. An important effect of the programme was that PPs felt more confident in voicing their needs during consultations with doctors and other health professionals. As the programme progressed, financial reimbursement for their time became a more important issue for the PP who was still in paid employment. PPs felt more confident know about becoming involved with teaching more senior doctors such as GPs. Illustrative quotes are shown in bold below:

**‘ . . . before this programme I didn’t know much about my back pain . . . now when I go to the doctor I know what to say . . . I’ve become more involved.’**

**Patient A**

**‘ . . . it makes me a little more confident in dealing with people . . . .’**

**Patient B**

**‘If I was to carry on with this I would want more money I am afraid, in recognition of what I am doing.’**

**Patient C**

### **5.5.7 Effect of teaching on student assessment performance**

The effect of the teaching on overall OSCE performance and in a specific station assessing history-taking skills in back pain was analysed by calculating the mean OSCE scores (as a %) for intervention and non-intervention groups. A t-test was used to look for a statistical difference in performance. A p-value of <0.05 was taken to be significant. Table 5.5 summarises the findings. The PP

teaching had no significant effect on performance in an OSCE station assessing back pain compared to students receiving standard teaching (79.3% in the former group, and 75.8% in the latter). However, looking at overall OSCE score, those in the intervention group did significantly better than those who received no extra PP teaching (79.2% vs. 77.2%).

<b>TABLE 5.5: EFFECT OF PP TEACHING ON STUDENT SUMMATIVE OSCE SCORES</b>		
No of students (n)	Mean OSCE score in back pain station (%)	Mean total OSCE score (%)
PP teaching (60)	79.3	79.2
Standard teaching (56)	75.8	77.2
Difference in scores between standard and intervention groups	0.14	<b>S</b> <b>p=0.03</b>
95% confidence interval	-1.3 - 8.4	0.11-3.8

S= significant at  $p < 0.05$

NS=non-significant  $p > 0.05$

## 5.6 Discussion

Patients are widely used in medical education. Standardised patients (actors trained to simulate a specific condition) have been used successfully in formative and summative assessment (van der Vleuten and Swanson, 1990; Pollol, 1995,). Davis, Russell and Skeith (1997) used standardised patients to help define learning needs for GPs and specialists. Although useful, an actor does not the true authenticity of a real patient talking about their condition. Several terms are used in the literature to describe patients with a specific condition trained to teach (patient instructors, patient partners, patient

educators). The term Patient Partners (PP) highlights the “two-way” passage of information between teacher and learner, an important part of adult learning. PPs have been mostly used in teaching examination skills. Undergraduate students taught examination skills by PPs have similar levels of skill to those taught by clinicians (Anderson and Meyer, 1978). Trained laywoman gynaecological teaching associates are now widely used to teach pelvic examination, and has led to improved interpersonal skills (Kleinman et al, 1996). PPs have also have been to shown to increase the awareness of the effect of a condition on the patient and their life, rather than separating the patient from the pathology (Vail et al, 1996). Wykurz and Kelly (2002), in a review of thirteen PP interventions, found that patients enjoy the teaching role and learners rate the teaching highly.

In relation to MSK disorders, PPs with arthritis have been shown to be as effective at teaching examination skills as senior rheumatologists (Hendry, Schreiber and Bryce, 1999; Raj et al, 2006). In under- and postgraduates, PPs can increase confidence in examination skills and retention of information (Branch and Lipsky, 1998., Branch et al, 1999). Postgraduate students taught hand and wrist examination by PPs had greater skills and knowledge when compared to those taught by non-specialists (Schreiber, Hendry and Hunter, 2000). There is also a positive effect on the PPs themselves, with increases in self-confidence and temperament scores (Riggs et al, 1982). There is little data on the use of PPs in primary care education, most research has used medical students, postgraduate trainees and standardised patients. This may be due to

ease of access to students and outcome measures such as examination performance that can be used as markers of skill. In order to train PPs to teach GPs, adult learners with a wide body of knowledge and different needs, it is important to ensure that PPs have the appropriate knowledge, skills and most importantly confidence in teaching undergraduates first, before moving on to established GPs. The results from this innovative study show that it is feasible to train patients with back pain to teach medical students effectively, providing them with the appropriate skills and confidence to facilitate teaching with more experienced clinicians such as GPs.

This was the first programme to train patients with back pain. Based on this study, a similar model could be used to train PPs with other chronic MSK disorders such as osteoporosis and fibromyalgia. The teaching was evaluated positively by students, allowing them gain a greater understanding of the impact of back pain on sufferers' lives, and to practise their clinical skills in a less formal environment, with immediate feedback. Feedback has been shown to be an important factor in improving skills in the setting of resuscitation (Marteau et al, 1990), and the same principle applies in history-taking and examination skills. The quantitative data showed no effect of PP teaching on OSCE performance in a single station assessing back pain, but PP teaching was associated with a significantly higher overall OSCE score. The qualitative data expresses more clearly the impact on student understanding of back pain, which is difficult to assess in a 5-minute OSCE station. However, it could be argued that the teaching, especially with the focus on communication skills and understanding of



psychosocial issues may have helped this group of students in other OSCE stations, leading to a higher overall score. The outcomes were again limited to within 6-months of the teaching episode. It would have been useful to follow these students up at later dates, for example in their final year, to see if they still used the skills developed in the PP teaching sessions in their daily practice. This was beyond the scope of the project unfortunately, but perhaps was a more important outcome measure than examination performance. In a similar study by Bideau et al (2006) looking at the use of 11 patient partners with rheumatoid arthritis to teach medical students, they also found that change in assessment scores correlated poorly with the qualitative data on the utility of the experience. In this study, the assessment was not summative (i.e. did not affect progression through the course), which may have affected the validity of the results. Current assessment methods are rather blunt tools to evaluate efficacy, and the effect on long-term maintenance of skills is an important outcome to address in further work.

There is no doubt that the PPs gained in confidence in their knowledge and approach to their pain management throughout the programme. It would seem logical that PP teaching frees clinicians for other duties. In practice, during the initial training and set-up phase of this programme, clinical teachers were needed in addition to the PPs. This need did reduce as PP confidence rose during the programme. With their larger numbers of PPs, it would be more likely that the PP teaching led to significant saving in Faculty time, although it is not mentioned at what point the PPs were allowed to teach without support. The

amount of training provided to PPs was significant at 24 hours in our study and 30 hours in the Bideau paper. This may prevent other groups investing in similar strategies, though once trained, there is convincing evidence that it leads to an enhanced student experience.

As the study continued, payment became an increasing issue. No mention is made in the Bideau paper of any payment made to patients for their time. In our study and that of Raj et al (2006), honoraria of £10-£20 pounds plus travel expenses were given. For the PP in our study who was still working, this became a real issue as the payment did not cover the time she took off work to teach. This led to her having to leave the programme just before she was due to start working with the GPs. This raises ethical issues about using patients to teach, especially if they are in paid employment. Paying appropriate fees for time out of work may not make it financially viable for the educational intervention to take place. Limiting PP involvement to those who do not work deprives the learner of the opportunity to understand the interaction between the patient, their MSK condition and their work, an important area to understand, especially in the context of the recent government publication written by Dame Carol Black entitled "Working for a healthier tomorrow" (2008), in which the positive impact of employment on physical and psychological well-being are promoted.

There were several other limitations to our PP study. Recruitment of patients took place in a hospital setting. Patients attending secondary care clinics may be

at the more severe end of the spectrum of back pain, and may not be representative of the majority of patients with back pain in the community. A pragmatic decision was made to recruit from hospital clinics, as patients had to be recruited in a short time. Even with that limitation however, the PPs were still able to provide students with an important understanding of living with back pain which should not be underestimated.

The student outcome measures were limited to immediately after the teaching, and an end-of-year assessment. Further interviews may have helped gain a better understanding about whether the PP teaching led to a more long-term change in behaviour.

Although there was qualitative evidence that PPs became more confident in managing their pain, it would have been useful to quantify this using health rating scales such as the SF-36 or assessment of change in pain severity over the teaching and training programme. Surrogate markers such as use of medication and sickness absence at work could also be used.

The study was conducted at one campus of a medical school with 3 university campuses. The PPs recruited were willing to facilitate teaching at other campuses. They had become familiar with the teaching environment and staff at the Archway campus. In order to make the PP teaching available to all Y3 students, it would have been necessary to recruit and train further PPs located close to the other campuses. This would have taken a similar amount of time

(24-30 hours), although some of this could have been run by the initial PP recruits.

## **5.7 Conclusion**

Training PPs to teach medical students is feasible and effective in developing clinical skills, though there is no effect on performance in a summative examination. PPs increase in confidence with length of teaching experience, which allowed their use as facilitators in the MSK training course that will be described in chapter 6.

## **Chapter 6: The Musculoskeletal Training Course**

### **6.1 Chapter summary**

A training course was delivered to 35 GPs in Camden and Islington Primary Care Trusts between January and June 2004. The GPs were recruited from the 75 doctors who responded to the needs assessment questionnaire in chapter 2, a response rate of 47%. The content and structure had been defined from a prior needs assessment (Chapters 3 and 4) and review of the literature. The course was delivered in small groups using a combination of educational strategies. Trained (Patient Partners) and untrained patients were used to facilitate teaching and learning. The course was an effective way of improving GP knowledge and confidence, but GPs expected the confidence to reduce after a period of 6 months with no reinforcement of knowledge and skills gained.

### **6.2 Introduction**

This chapter will describe the content, structure and evaluation of an educational theory-informed and needs-based training course for GPs in Camden and Islington Primary Care Trust, based on data obtained in the needs assessment and the patient partner training programme (Chapters 3-5). The effect of this intervention on GPs self-perceived confidence in management of common MSK disorders will be investigated. The evaluation data obtained will be discussed critically in the light of data from the literature.

## **6.3 Methods**

### **6.3.1 MSK subject areas included in the training course**

In chapters 3 and 4, the needs assessment highlighted several areas that local GPs wanted in a training course. Topics selected were based on the needs assessment and their relevance/importance in primary care- a mixture of MSK examination (upper and lower limb, back), and specific MSK conditions (osteoarthritis, osteoporosis, soft tissue problems). The GALS screen (Doherty et al, 1992) was also included as an introduction to MSK examination, to help place the regional examinations in context of the whole MSK system. The authors suggested that the screen, although developed to teach undergraduates, would also be useful to teach postgraduates including GPs. The PPs with back pain had developed sufficient confidence to now be used as a resource to facilitate GP teaching. Joint injections were mentioned frequently in the GP interviews, but in the questionnaire were ranked lower in importance than expected. As there was a difference in views in this area, they were included in the course. Another theme arising from the literature was appropriate use of laboratory investigations in primary care. From personal experience talking to rheumatologists and GPs, many referrals to the rheumatology departments have been to ask for guidance on the significance of an autoantibody result in the context of MSK symptoms, or to assess a patient with raised inflammatory markers with no obvious cause. As mentioned in chapter 1 (section 1.11), inappropriate use of investigations can lead to diagnostic confusion and over-medicalisation of symptoms. It was therefore important to include this in the

course, even though it was not mentioned specifically in the needs assessment.

Reviews of CME activities using needs assessment have stated that:

“... a needs assessment should not be based entirely on self-assessment but should use evidence from a range of sources.”(Cantillon and Jones, 1999)

Gout was mentioned in the free-text part of the needs assessment questionnaire as an area for study, which is linked to the use and interpretation of uric acid levels and was therefore also included. GPs in the needs assessment described the challenges of managing “heartsink” patients (see section 4.4.4), and wanted to learn ways of helping this patient group. Cognitive and psychological methods were mentioned, but were not possible to be discussed fully in a 1.5 day course. A theme of managing the patient with complex biopsychosocial problems formed part of the group discussion throughout the course, specifically in the sessions on back pain, use of laboratory tests, shoulder and upper limb pain. Increasing course content further would lead to a more superficial and didactic discussion of subject areas rather than a detailed discussion on core topics. There needed to be adequate time in the course for questioning, reflection and group discussion. The final content and structure was reviewed to ensure that it was appropriate. Now that the content had been finalised, the next step was to define the specific learning outcomes of the course.

## **6.3.2 Aims and Objectives of the MSK Training Course**

### **6.3.2.1 Aim**

An aim is an overarching theme of what the learner should achieve. For the course, the aim was:

1. To provide GPs with the appropriate knowledge and skills to manage common musculoskeletal conditions effectively.

### **6.3.2.2 Objectives**

An objective is a more specific word that defines what the learner should be able to do by the end of the learning experience. An objective usually relates to a change in knowledge, skills or behaviour. They are derived from a modified version of Bloom's Taxonomy of educational objectives (Anderson and Kratwohl, 2001), that classifies cognitive skills into 6 domains: knowledge, comprehension, application, analysis, synthesis and evaluation. The objectives are shown below.

1. To be able to perform a simple MSK screening examination and elicit abnormalities
2. To develop a systematic method to examine the back, knee and shoulder.
3. To request and interpret the results of common laboratory tests used in diagnosis and management of MSK conditions
4. To be able to diagnose and treat patients with common musculoskeletal complaints such as osteoarthritis, osteoporosis and soft tissue complaints
5. To increase confidence and skill in performing joint injections, and to understand the rationale behind their use.



The next step was to define the educational environment that would facilitate the GPs to reach the aim and objectives defined above. As mentioned in the needs assessment and in chapter 1, the educational approach was to use small group work and a mixture of problem-based, practical and didactic methods that allowed time for experiential learning and reflection.

### **6.3.3 Location and timing of the course**

The training course took place over 1.5 days, a time chosen to maximise the ability of GPs to attend, based on the most common stated preference in the GP questionnaire (section 3.6.9), and that would also allow appropriate time to achieve the objectives of the course. The course was held in the Clinical Skills Centre at the Archway Campus of Royal Free and University College Medical School, a suite of rooms used for under- and postgraduate teaching and familiar to local GPs. These rooms were multi-purpose, containing audiovisual facilities and patient examination areas. There was no commercial sponsorship for the course, a conscious move on my part to avoid issues around drug promotion and its possible adverse effects on the knowledge and skills gained during the training programme. The courses took place in February, March, April and June 2004. Different weekdays were used in each course to enable the maximum number of GPs to attend.

### **6.3.4 Recruitment of GPs to attend the training course**

From the 75 GPs who responded to the needs-assessment questionnaire in chapter 2, 67 (90%) stated that they would like to attend a training course.

Invitations (see Appendix 3) were sent to these GPs in November 2003, and again in January 2004 to those who had not responded after the first invitation by post. No further contact was made after this point. The invitation stated the dates of the courses, that there was no charge for the course. Invitees were asked to email or phone me if they would like to attend. The GP was encouraged to pass the invitation to other members of the Practice. After an expression of interest was received, a further document confirming a place on the training course was sent by email, together with reporting instructions and a timetable. A maximum of 10 GPs could attend each training course, to ensure an effective educational environment for small-group teaching and learning. This number also allowed for GP dropout.

### **6.3.5 Patient recruitment**

PPs were used in the back pain session and their recruitment was described in chapter 5. A top-up training session was provided prior to the first GP training course that revised the content of the PP training described in chapter 5, and emphasised the differences in learning needs between undergraduates and postgraduates.

Patients used in the GALS screen, knee and shoulder examination were recruited from the Whittington Hospital patient database, kept on a secure computer in the clinical skills centre. These patients were used in student teaching and assessment on a regular basis.

All patients were paid a £10 honorarium for their time and travel expenses were compensated. Unfortunately, this led to the loss of PP A, as she was unable to continue taking time off work without adequate remuneration, which was beyond the scope of the project.

### **6.3.6 Course Content**

The final content of the course, including teaching materials is described in Appendix 4.

### **6.3.7 Course evaluation methods**

#### **6.3.7.1 GP evaluation questionnaire 1**

Questionnaire 1 (see Appendix 5) was given out the end of the course and was developed from a questionnaire used by the Whittington Hospital NHS Trust to evaluate postgraduate educational activities was adapted to gain more information on their perceptions of the utility of the course to their daily practice. The first section asked GPs to give their evaluation of the degree to which the training course was: relevant to their needs; structured appropriately, used a variety of learning methods; was clear in its presentation; involved active participation and feedback and avoided commercial promotion. These domains were scored on a 5-item Likert scale from strongly disagree (scored as 1) to strongly agree (scored as 5). These domains are reproduced below from the questionnaire.

	Tick the boxes to indicate your preference				
	Agree strongly	Agree	Not sure	Disagree	Disagree strongly
<b>The programme was:</b>					
a) RELEVANT to the audience					
b) Well & clearly STRUCTURED					
<b>The programme featured:</b>					
c) A VARIETY of teaching/learning activities					
d) CLARITY of presentation					
e) ACTIVE INVOLVEMENT of participants					
f) Individual FEEDBACK to participants					
g) AVOIDANCE of commercial promotion					

The next section of questionnaire 1 asked attendees to rate the utility of each teaching session on a scale of 1 to 5, 1 being not at all useful and 5 being very useful. This was followed by four free text questions that asked the attendees to list up to 3 helpful aspects of the course, what could have been improved, and what skills they had “taken away” with them from the course that would be useful in daily practice. These questions reproduced below from the questionnaire.

Please rate how useful you found each of the sessions during the course from 1-5. 1= not at all useful and 5= very useful	Score out of 5
GALS screen	
Back pain	
Blood tests in rheumatology	
Knee examination	
Joint injection	
Osteoporosis	
Osteoarthritis	
Shoulder examination	

<ol style="list-style-type: none"> <li>1. Please list up to three aspects of the educational activity which you found helpful.</li> <li>2. How could the educational activity be improved?</li> <li>3. If you learned any new skills which will be useful in practice, what were they?</li> <li>4. What, if anything, did you “take away” from the educational activity?</li> </ol>
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### 6.3.7.2 Questionnaire 2

Questionnaire 2 (see Appendix 5) was sent by email to all course attendees 4-6 weeks after the course. Parts 1 and 2 asked GPs to self-assess their change in confidence and competence in managing the common MSK conditions included in the training course now as compared to before the training course. A 5-point scale was again used, with 1= much less confident and 5 = much more confident. A neutral option of no difference in confidence was also provided and scored as 3. Below each score, space for free text was given, and respondents were encouraged to explain their responses using free text. I was interested in exploring the reported difference between self-reported confidence and actual

performance (see section 3.4.3) by asking GPs to look at each confidence and competence as separate domains. I hoped this would provide further information about what GPs perceptions were of this research finding. The section of the questionnaire asking about confidence is reproduced below. The section on competence had the same structure.

**Part 1**

For each of the following questions, rate your response on a scale of 1-5.

- 1= much less confident
- 2= a little less confident
- 3= no change in confidence
- 4= more confident
- 5= much more confident

Base your answers on any difference in **confidence** before and after the training course. In the space under each question, please add free text about which particular areas you have perceived a change in confidence, and why this change (if any) has come about.

Score

1. Management of back pain
2. Knee examination and diagnosis
3. Musculoskeletal examination as a whole
4. Use of investigations in rheumatology
5. Examination and diagnosis of shoulder problems
6. Management of osteoarthritis
7. Management of osteoporosis
8. Joint injection

Part 3 of the questionnaire GPs were also asked to estimate how confident they would feel in 6-months time in managing the same condition if no further training were given. A 5-point scale was again used, with 1 =much less confident, 3= no change, and 5= much more confident. This part of the questionnaire is shown below

**Part 3**

I would like you to think about how **confident** you would feel in 6-months time if no further “top-up” training was given. Use the same 1-5 rating scale as in Part 1.

Score

1. Management of back pain
2. Knee examination and diagnosis
3. Musculoskeletal examination as a whole
4. Use of investigations in rheumatology
5. Examination and diagnosis of shoulder problems
6. Management of osteoarthritis
7. Management of osteoporosis
8. Joint injection

The final part of the questionnaire asked for free text comments on the ideal format and timing of top-up training.

**6.3.7.3 Patient Partner Evaluation**

The 2 PPs with back pain taking part in the MSK training course were asked to write a reflective document based on their experiences, highlighting any differences between teaching undergraduate medical students and GPs.

**6.3.8 Data analysis**

Quantitative data was analysed using Statistical Package for Social Sciences version 16.0 (SPSS® for Windows®, SPSS Inc, Chicago, IL, USA) was used in questionnaire analysis to calculate descriptive statistics and to investigate differences between confidence scores at 4-6 weeks and 6-months, and also to assess any difference in GP scores in the domains of confidence and competence at 4-6 weeks after the course. A p-value of <0.05 was taken to be significant. Wilcoxon signed ranks test for paired non-parametric data was used. Qualitative data was analysed using the methods described in chapter 2.

## 6.4 Results

### 6.4.1 Response to invitation to attend training course

35/67 GPs responded to the invitation after the second mailing, a response rate of 52%.

### 6.4.2 GP Questionnaire 1

All 35 attendees completed this evaluation at the end of the course (response rate 100%). The median and mean scores for utility of the training course sessions are shown in table 6.1. The scores are high for all sessions, with the examination sessions scoring higher than the pure case-based sessions such as osteoporosis. Joint injection scored the lowest of all the sessions.

<b>TABLE 6.1: POST-COURSE EVALUATION: CONTENT</b>		
<b>Teaching session</b>	<b>Utility Mean</b>	<b>Utility Median</b>
	1= not at all useful, 5= extremely useful	
GALS screen	4.3	5.0
Knee examination	4.3	5.0
Laboratory tests	4.2	4.0
Back Pain	4.1	4.0
Joint Injection	3.6	4.0
Osteoarthritis	4.3	4.0
Osteoporosis	4.5	5.0
Shoulder examination	4.5	5.0

Table 6.2 summarises GP evaluation of the course structure. The course was seen to be highly relevant and well structured and the amount of feedback given to attendees was rated highly.



<b>TABLE 6.2: POST-COURSE EVALUATION: STRUCTURE</b>		
<b>Domain</b>	<b>Utility Mean</b>	<b>Utility Median</b>
	1= strongly disagree, 5= strongly agree	
Relevance	4.8	5.0
Clarity	4.8	5.0
Interactivity	4.9	5.0
Feedback	4.5	5.0

Table 6.3 summarises GP free text comments covering what particular areas of the course would change their practice, and their views on the educational strategies involved. The GALS screen was the most popular session, with many GPs writing that this provided a structure for differentiating normal from abnormal. As I expected from informal feedback and the Likert scale responses, the examination sessions were most useful in developing their practice. The more didactic sessions with case histories but no patient involvement were not mentioned as frequently.

<b>TABLE 6.3: POST-COURSE EVALUATION: AREAS MOST USEFUL IN DEVELOPING SKILLS AND PRACTICE</b>		
<b>Domain</b>	<b>Number GPs N=35</b>	<b>%</b>
GALS screen	19	54
Knee examination	16	46
Laboratory tests	8	23
Back Pain	16	46
Joint Injection	8	23
Osteoarthritis	1	3
Osteoporosis	4	12
Shoulder examination	24	69
Increase in confidence	10	29
Learning with patients	11	31
Learning materials	9	25
Small Group approach	14	40

The teaching materials and small group approach (supportive environment, interaction and ability to ask questions) were regarded highly. The variety, clarity and utility of the learning materials were mentioned specifically by 9 GPs. 3 GPs wrote that this style of teaching should be applied for other specialty areas. The immediate post-course evaluation listed few areas for improvement apart from the addition of inflammatory arthritis as a subject area. Other themes that arose from the free text comments was the positive effect of meeting GP colleagues and rheumatologists together in a small-group setting, reassuring them that what they found difficult to diagnose and manage was shared by other GPs in the group. Quotes from the free text comments are shown below:

**“This type of teaching for primary care should be applied for all specialties.”**

**“Overall this has been a really, really excellent course and I feel a lot more confident...friendly, approachable, relaxed, good pace and GP orientated”**

**“More confident in managing and examination of rheumatological problems.”**

**“Good to hear that other doctors deliberate as much [as me]”**

**“What I am doing seems to be OK and in line with current practice”**

### **6.4.3 GP Questionnaire 2**

This follow-up questionnaire was emailed to all 35 course participants 4-6 weeks after they had attended the course. A reminder email was sent after 10 days. Responders were invited to email or post the questionnaire back. 16 replies were received (response rate 46%). The results are summarised in table 6.4.

<b>TABLE 6.4: GP SELF-ASSESSMENT OF CONFIDENCE AND COMPETENCE AT 4-6 WEEKS (4-6W) AFTER THE COURSE, AND GP ESTIMATION OF CONFIDENCE AFTER 6 MONTHS (6M) WITH NO FURTHER TRAINING</b>								
	Back pain	Knee examination	GALS Screen	Laboratory tests	Shoulder examination	Osteoarthritis	Osteoporosis	Joint injection
Confidence 4-6 W								
Mean	3.8	4.3	4.2	4.4	4.4	4.2	3.9	3.8
Median	4.0	4.5	4.0	4.0	4.5	4.0	4.0	4.0
Competence 4-6 W								
Mean	4	4.1	4.0	4.1	4.2	3.8	3.8	3.8
Median	4	4	4	4	4	4	4	4
Confidence 6M								
Mean	3.4	3.4	3.3	3.4	3.3	3.6	3.5	2.9
Median	3.5	3.5	3.0	3.0	3.0	3.0	4.0	3.0
Difference between confidence and competence at 4-6W	NS	NS	NS	NS	NS	<b>S (p=0.03)</b>	NS	NS
Difference in confidence at 4-6W and 6M	<b>S (p=0.02)</b>	<b>S (p=0.003)</b>	<b>S (p=0.002)</b>	<b>S (p=0.002)</b>	<b>S (p=0.001)</b>	<b>S (p=0.015)</b>	NS	<b>S (p=0.005)</b>

S= significant (p<0.05)  
NS = non-significant (p>0.05)

There was no significant difference in GP scores between self-reported confidence and competence at 4-6 weeks in any of the subject domains shown in table 6.5 apart from osteoarthritis ( $p=0.03$ ). The self-reported changes in confidence between 4-6 weeks and 6-months after the course were highly significant ( $p<0.02$ ) in all domains except osteoporosis ( $p=0.11$ ) 12/16 (33%) of the responding GPs agreed that top-up training was necessary, at least every 1-2 years. 2 GPs felt that lack of study leave (4.5 days per year) prohibited attendance at further CME events, and a written newsletter would be sufficient. In free text comments, 2 GPs mentioned referring back to their printed materials and handouts since the course.

#### **6.4.4 Patient Partners**

The main theme that arose from the PP reflections were the differences in attitude to learning from GPs compared to students.

**“They [students] thought they understood everything about life and medicine and did not realise that I had been there, done that and got the T-shirt!”**

**PP A**

**“I found the GPs a lot more attentive and interested. Most had no experience of ankylosing spondylitis and were more than willing to find out the problems of day-to-day life and how it affects one physically.”**

**PP B**

PPS found the less didactic approach with GPs worked well, and they would have liked to give feedback on the GPs history-taking skills.

## **6.5 Conclusion**

This chapter has described the development, delivery and evaluation of a CME intervention for GPs in MSK disorders. It increased confidence in management of common MSK disorders. The educational approach was evaluated highly, and forms a template for educational interventions in other domains.

# **Chapter 7: General Discussion**

## **7.1 Introduction**

The aims and objectives of the thesis in chapter 1 are repeated below in order to relate them to thesis findings.

## **7.2 Aims and objectives of the thesis revisited**

The research question posed in this thesis was: Is it possible and feasible to improve GP delivery of care to patients with MSK problems with an evidence-based educational intervention? We hypothesised and showed that training in management of MSK disorders in primary care was variable due to several factors:

1. Shortcomings in GPs undergraduate and postgraduate training
2. Lack of appropriate structure and content of CME interventions that facilitate changes in behaviour and practice.

### **7.2.1 Research Objectives**

1. To investigate GPs experiences of undergraduate, postgraduate and continuing medical education in musculoskeletal disorders.
2. To investigate GPs self-rated confidence in managing musculoskeletal disorders, and to understand how important they rate knowledge of management of specific MSK disorders in primary care.
3. To investigate GPs preferences for the structure and content CME activity that will maximise their learning.

4. To evaluate the effect of a needs-based training course in GP confidence and skills.

### **7.3 Overview of findings from the thesis, related to the aims and objectives**

The importance and burden of MSK disease was shown in chapter 1 of this thesis. As the population ages, the prevalence of MSK disorders will increase, further utilising limited resources. Social deprivation is associated with increased prevalence of MSK symptoms. Although mortality due to MSK conditions is rare, they cause considerable morbidity, affecting quality of life and ability to work, with consequent use of health and social care resources. No single healthcare professional group alone can manage this burden of disease. It will involve a partnership between professionals in primary and secondary care. Healthcare policy is now directed towards health promotion, disease prevention and making care more patient-centred and community-based. The literature shows that currently, management of common MSK conditions is suboptimal, with poor patient satisfaction with treatment in many cases. It is therefore vital that all healthcare professionals including GPs have the necessary knowledge and skills manage common MSK disorders.



### **7.3.1 Research objectives 1-3**

The needs assessment in chapters 3 and 4 fulfilled research objectives 1-3 and confirmed that GP postgraduate training and continuing medical education in rheumatology remains unstructured and variable. The majority (59%) of the GPs questioned had received no structured postgraduate training in managing MSK disorders. Of those that did receive training, the majority learned by attendance at ward rounds and clinics rather than dedicated MSK training posts. Despite vocational training for GPs becoming mandatory in 1981, there has been little interest from policy makers to make some form of MSK training obligatory for GP trainees, as shown by Lanyon et al (1995). Qualitative data from the needs assessment again emphasised that vocational training did not prepare GPs to manage the large numbers of patients with MSK disease that they see, estimates of 15-20% confirming data in the literature. The gap between theory and practice was a common theme in the GP interviews. The ability to detect MSK abnormalities and then investigate and treat appropriately was seen as needing improvement. The GPs identified very strongly with their roles as gatekeeper (referring only those who need a specialist opinion) and carer of the “whole patient”, and were keen to bridge the theory –practice gap with effective education that was appropriate to their daily practice, using practical examples and real patients where possible, in a small group setting.

GPs have identified what educational intervention will be most effective for them in the domain of MSK disorders. Despite this, 58% of GPs responding to the

questionnaire in chapter 3 attended lectures, an intervention we have seen is common but much less likely to lead to long-term changes in knowledge or behaviour (Badley and Lee, 1987). An intervention based on sound educational principles that facilitated change in knowledge behaviour and practice based on experience and learning in context would be more likely to be effective. The needs assessment highlighted the theme that GPs valued learning from and with patients.

Chapter 5 described the development and delivery of a Patient Partner programme for patients with back pain to teach medical students and GPs, and fulfilled research objective 3. The training programme was effective and feasible. Medical students valued the teaching as it allowed them to practise their history taking and examination skills with immediate feedback in an informal setting. Quantitative assessment showed no effect of teaching on performance in an OSCE station assessing history taking in back pain, but the teaching was associated with better overall OSCE performance compared to the group who did not receive teaching. Faculty teaching time investment is high initially, during initial PP training and student teaching, but reduces with time as PPs become more experienced. Retention of PPs proved difficult, with two patients having to drop out due to work commitments. Remuneration for PPs who are still in work is a problematic issue that may prevent a diverse spectrum of patients taking part. Nevertheless, we have shown that it is feasible and practical to train PPs to teach medical students, and, once they have gained in confidence, to facilitate GP teaching. This model could be transferred to other chronic stable MSK

conditions such as osteoporosis, and to other specialties such as chronic respiratory or gastrointestinal disease.

### **7.3.2 Research objective 4**

Chapter 6 described the successful design, delivery and evaluation of an innovative needs-based and research-informed training course for GPs. The intervention was evaluated well by attendees, leading to increased confidence in managing common MSK conditions after the course, but with an expectation that the confidence would reduce over the subsequent 6 months with no further training. The educational approach to the course, with small groups, ability to practise skills and interaction with real patients facilitated learning and discussion between GP peers and hospital specialists. From the information gained in the needs assessment, it was essential to make the course based on adult-learning principles and what GPs actually see in practice, so maximising the chances of facilitating a change in practice based on increased knowledge (transformative learning and situated cognition, described in sections 1.9.3 and 1.9.4). Clinical cases are an excellent way of introducing a subject to a small group audience, encouraging a problem-based approach to learning, supplemented by a small amount of didactic teaching. Using cases, patients and simulations, both reflective practice and experiential learning (section 1.9.6) were encouraged. The teaching was facilitated by me alone to ensure that the content was appropriate to the needs-assessment and to provide an educational environment where learners felt comfortable to ask questions.

The course was delivered by myself in its entirety, and approximately 1 hour was given to each subject. This was adequate time in all sessions apart from joint injection, where an extra 45 minutes would have been useful, similar to the 110 minutes used in an American joint injection study (Jolly et al, 2007). There is wide variation in the duration of CME interventions in the literature, ranging from 90 minutes to 4-hours in two studies looking osteoarthritis education (Rahme et al, 2005 and Chassany et al, 2006). No optimal time for a CME intervention has been recommended, and I was happy with the timings I had allowed.

The structure of the course as described could be criticized for concentrating on teaching about joints in isolation (the back, the knee, the shoulder) without the opportunity for learning about the musculoskeletal system in a more holistic way. Chronic widespread pain or fibromyalgia are common with a population prevalence of 0.5-5% (White and Harth, 2001), lead to significant disability and are associated with psychosocial problems. Throughout the course however, myself and the GPs referred frequently to management of patients with complex symptoms affecting multiple joints, and the effect of psychosocial problems on patient presentation and use of healthcare resources. Care of the so-called heartsink patient became a strand of discussion in several sessions, and in future courses would be included more explicitly in the teaching materials.

### **7.3.2.1 Questionnaire 1**

The course was evaluated positively by the attending GPs, with all subjects scoring well (mean Likert scale scores >4.0) apart from joint injection (mean Likert Scale score 3.6). This was due to a lack of time mentioned above, and

also the perceived utility of this session for GPs who did not inject joints, or would not have the opportunities to practise on real patients after the course. In contrast, all GPs could go back to their practices and continue to develop their joint examination and disease management skills.

The GALS screen was the most popular session mentioned 16 times in free text comments (see table 6.4). In the original GALS paper (Doherty et al, 1992), it was stated that it would also be useful to GPs, but has been used most often in undergraduate teaching. A simple screen that has little impact in teaching time can provide large benefits for the learners. An achievable goal that would improve patient care is for the majority of GPs to be able to perform and interpret a GALS examination. This should be done locally and can be facilitated by hospital specialists or GPs with a special interest. This “snowballing” approach is efficient and could be highly effective. A recent Canadian study has validated its use in primary care (Beattie et al, 2008). Its use in the UK should now be advocated strongly by stakeholders involved in the care of patients with MSK disorders. The Arthritis Research Campaign has also produced the Regional Examination of the Musculoskeletal System booklet and DVD. This resource moves on from GALS to provide a guide for regional locomotor examination (Coady, Walker and Kay, 2004). Validation work in primary care is an area for further work in this area. The course structure was evaluated as being transferable to other specialties. Indeed, a CME template could be developed and disseminated to CME providers to encourage them to use the

most effective educational methodologies in future interventions. This would also increase the utility of evaluation.

Little work has been published on the use of patient partners in GP education in MSK disorders. The approach shown in this chapter, with PPs facilitating a discussion on back pain was evaluated very positively by the GPs, with one-third mentioned it as a specific learning point that they would develop in their practice. The PP training and experience in teaching undergraduates prepared them well for working with GPs, whom they felt were keen and interested to hear their experiences, more so than the undergraduates. Perhaps this reflects the length of experience of the GPs, and their ability to use adult-learning theory principles in the teaching course. Using patients in CME activities requires more organisation than standard CME, and will have financial costs for training and time spent teaching for the patient that may preclude its use. In fact, this was the precise reason why one PP had to stop their involvement in the course. However, this strategy should be pursued as it benefits both learner and patient. Joint injection was taught by simulation in the training course. This method is widely used to train GPs and trainees to perform joint injections competently. Training with simulators can develop clinical and practical skills in a safe environment that can allow the learner to develop confidence and skill to then perform the skill on real patients. This will maximise patient safety and reduce the risk of error (Ziv et al, 2003). Factors that enhanced the educational impact of simulation in the training course were the ability to give immediate feedback, a controlled environment (the clinical skills centre) in which to practise the task,

the ability to repeat the task until feeling competent and an active approach to use rather than acting as a bystander, consistent with findings from the literature (Issenberg et al, 2005). Like many of the skills developed in the course, joint injection skills were expected to decline within 6 months after the training course, consistent with data from other authors (Jolly et al, 2007). Comments by the GPs in the needs assessment echoed these findings. Although simulators are satisfactory initially, the skills learned need to be developed by using real patients. The opportunity for giving joint injections by individual GPs will vary according to local facilities and opportunity to see appropriate patients. This was illustrated by a written comment on questionnaire by a GP, who said:

**“..practising on models is helpful but unless regularly doing joint injections difficult to maintain confidence in this area.”**

Also, not all GPs will want to perform joint injections, illustrated by the fact that only 23% participants mentioned it as a specific learning point they would take home and use in daily practice. This low number compares with the 69% of participants who mentioned shoulder examination, 46% who mentioned knee examination and back pain and 54% who mentioned the GALS screen.

Confirming this theory, a US study, fewer than 20% of primary care doctors carried out joint or soft tissue injections, the majority referring to hospital specialists. The main reason for this was perceived discomfort in performing the procedure (Jolly and Curran, 2003).

### **7.3.2.2 Questionnaire 2**

The estimated confidence in managing common MSK disorders included in the training course was significantly lower 6-months after the initial intervention if no further training was given in all domains apart from osteoporosis. The finding for osteoporosis is difficult to explain as there were few specific citations in the evaluation of osteoporosis being an area most useful in developing practice (mentioned by 12% attendees). In fact, osteoarthritis was mentioned even less (by 3% attendees), yet confidence levels at 6 months were significantly lower than at 4-6 weeks after the course. Qualitative data at this point would have been useful in identifying why this change would have occurred. Several possibilities may exist: lack of reinforcement of skills once back in daily practice may lead to a reduction in confidence. However with the ubiquity of MSK complaints in primary care, it would be unfortunate if this was the case. GPs may feel that with the pressure of time to see patients, they do not get the opportunities to practise their newly acquired skills, and so revert to previous behaviour. Even if these confidence scores are an overestimate, they are educationally significant and imply that “top-up” training is required to maintain skills. As reported in the follow-up questionnaire, top-up training was thought to be feasible on an annual basis, but not necessarily in the form of a further short course. GPs felt a newsletter would be sufficient, but it is unclear if such a publication would be read by the target audience in order to evaluate its effectiveness. Self-assessment with computer-aided learning (CAL) would seem an effective way to address the top-up training issue (Haq and Dacre, 2003).



GPs could be directed to a website containing multimedia resources (joint examination videos, clinical images, PowerPoint presentations) with a self-assessment quiz for GPs to complete with feedback on their performance. The advantages of CAL in this context are that it can be done by the GP at their convenience, it provides feedback on performance and access to further resources. A disadvantage is that it is usually done as a solitary activity, with the GP losing the positive aspects of sharing learning experiences in a group. The development and maintenance of such a website would require significant investment of personnel and funding however.

The reduction in confidence emphasises the need for reinforcement of knowledge to maintain skills. There is no agreement however on the duration between educational events and how reinforcement should be delivered.

Subject specific workshops in osteoarthritis have led to improved patient satisfaction with treatment and reduced pain levels, and more appropriate drug use, if compared to simple guideline dissemination (Chassany et al, 2006, Rahme et al, 2005). Increasing the number of intervention episodes seems to increase the chance that there will be a resultant change in physician behaviour (Davies et al, 1999). Data from the questionnaire 2 showed that reinforcement occurred and was initiated by the GPs themselves. Two GPs reported looking back at their notes or handouts since the course, and although it was not asked specifically, it can be hypothesised that this reinforcement helped the GP continue to provide effective care for their patients.

In questionnaire 2, there was no significant difference in scores in competence and confidence 4-6 weeks after the training course. The main reason for this is, as mentioned by one GP specifically, that the two terms are used interchangeably. The questionnaire did not provide formal definitions, which may have standardised the understanding of each term by the respondents. Other studies (Tracey et al, 1997) looked at this issue by comparing confidence with competence as measured by a written assessment. The original research plan was for attendees to take part in a peer-assessed objective structured clinical examination (OSCE) before and after the course, to assess observed change in performance, which could then be correlated with perceived competence, as well as giving the attending GPs a measure of their achievement. This plan was resisted strongly by the majority of the GPs attending the course. They felt that they did not want to be examined by their peers or hospital specialists. Despite explanations about the utility of such an assessment and reassurance about the confidentiality of results, the OSCE was not used in evaluation of the training course. In the light of government drives to measure competence in all doctors under the processes of relicensing and recertification (General Medical Council, 2008), which will involve comprehensive assessments, it is important that all health professionals become accustomed to being assessed by their peers. The training course had no commercial sponsorship.

### **7.3.2.3 Sponsorship of training course**

There is increasing concern about the effect of pharmaceutical sponsorship of CME activities, and its negative effects on CME subject selection, educational emphasis and doctor's management that can distort the focus of CME activities (Pisacane, 2008). A report by the Josiah Macy Foundation (2007), that hosted a nationwide conference on CME, highlighted its shortcomings eloquently, and issued statements to guide future activities, based around increasing methodological rigour, removing pharmaceutical involvement and making learning relevant to the workplace.

### **7.3.2.4 The MSK course as a form of continuing medical education**

The training course fulfilled the definition for a continuing medical education as defined in section 1.6 and contained many of the features of a successful continuing medical education (CME) intervention. It was needs-based around learning relevant to daily practice (Cantillon and Jones, 1999). It allowed exchange of ideas and problem-solving between the GPs, a contextual factor important in facilitating change (Flores, Reyes and Perez-Cuevas, 2006) and exemplified by several GP comments saying that they gained from having the opportunity to discuss cases with their peers, realising that many of them faced similar diagnostic and management dilemmas. The course allowed attendees to practise their skills on real patients, a factor shown to be effective in improving physician performance (Davis et al, 1992; Davis et al, 1995). The improvements in knowledge and confidence after a CME event is consistent with the literature (O'Brien et al, 2001; Mansouri and Lockyer, 2007; Marinopoulos et al, 2007;).

29% of attendees mentioned specifically that increased confidence was the most useful aspect of the course in developing their skills and practice. The structure of the course used different methodological approaches to maximise effectiveness. Lectures formed a small part of the teaching programme, but are a popular method of CME (Stancic et al, 2003). Most GP CME activity in rheumatology delivered by specialists was in the form of didactic lectures, useful for conveying information to a large group but not effective at facilitating discussion or interaction between speaker and participants (Badley and Lee, 1987). Other studies have found no or little effect of lectures on knowledge acquisition (Davis et al,1999; O'Brien et al, 2001; Smits et al, 2003). Active participation in a small group was the key to the success of the training course, and the literature supports its use to facilitate positive changes in behaviour, knowledge and patient outcomes (Davis et al, 1999; O'Brien et al, 2001). 40% of attendees specifically mentioned the small groups as most useful in developing their practice.

The MSK training course took GPs away from their workplace for 1.5 days, time that could have been spent in patient care. Other methods of CME could have been adopted to deliver the course content that would not require this significant amount of time off work. Printed course materials (PowerPoint presentations and written examination guides) alone could have been provided to GPs to read at their convenience, relying on diffusion of information to achieve change in behaviour and practice. I agree with Kanouse and Jacoby (1988) that this theory cannot apply to CME as other contextual factors apply such as the perceived relevance of the CME subject, and the willingness of the learner to change.

Journals provide a ready source of CME activity, and an advantage is that it can be done anywhere for as long as the reader has time. However, the amount and quality of printed material available can be overwhelming. Grimshaw et al (2002) estimated that doctors spent on average 1 hour per week reading journals for CME, too short a time to work through the materials in a 1.5 day course. The content of the MSK training course delivered entirely in written form would not have been a successful method for several reasons: they may not have been read by many GPs, often added to the large amount of literature they receive on a daily basis. There would be no opportunity for GPs to ask questions or practise skills in a supportive environment, all factors less likely for the intervention to be effective.

Electronic learning (e-learning) was used as a modality in the training course, and is defined as:

“learning facilitated and supported through the use of information and communications technology.” (Joint Information Systems Committee, 2007)

It is a term used to describe a variety of methodologies, using electronic media alone or in combination with other more traditional strategies to promote learning. The CD-ROM “Virtual Rheumatology” covering shoulder examination is classed as e-learning. A training course delivered purely by e-learning has the theoretical advantages of convenience, immediate feedback and ability to combine text, audio and video. There may also be a forum for learners to reflect on the CME activity online individually or in a group. However, access to such material may not be equal. Age and gender may affect confidence and ability to

access internet-based CME, with younger age groups more experienced and willing to use these methods (Casbeer et al, 2002). There are also considerable costs involved in developing and maintaining a CME website that may preclude its efficacy. Wutoh, Boren and Balas (2004) reviewed 16 randomised controlled trials involving internet-based CME. The overall outcome was that it was as effective as traditional modalities, though generalization was difficult due to the heterogeneity of the studies. More recently, a study of Canadian occupational health physicians found no difference in knowledge gains between internet and traditional lecture-based CME (Hugenholtz et al, 2008). An e-learning approach may be a useful way to reinforce the information gained during the initial training course. The advantage is that this could be done at the GPs convenience, but would require considerable academic and financial investment to develop and maintain which was beyond the scope of this study.

Another approach that was considered but not used is academic detailing, which involves the teacher being in “educational outreach” in the learner’s environment to provide information and support. This format was found to be popular with the group of 4 GPs interviewed as part of the case study described in chapter 3.

Several studies rated academic detailing as high in educational value (Allen et al, 2007). Academic detailing in rheumatology has been shown to lead to reduced referrals to secondary care and GP satisfaction, although this was a pilot programme that would have required considerable resource to implement widely (Suris et al, 2007). A significant barrier is time, with many GPs saying that CME during office hours is impractical. Despite its apparent utility, it requires

significant resource in the form of the teachers, and sufficient time available for the learner. For this reason, it was not used in the course.

### **7.3.2.5 Effectiveness of the MSK training course compared to data from literature**

The evidence from this study is that a CME intervention can improve confidence in management of common MSK conditions, but how effective is it compared to other CME interventions in the literature? This question is difficult to answer definitively as transferability and direct comparison with other CME studies is difficult due to large variations in study population, methods and evaluation. Evaluation strategies have used clinician focused (changes in knowledge, confidence, referral patterns or medication use) and patient-focused (satisfaction, resource utilisation, referral to specialist) outcome measures alone or in combination, with mixed results.

MSK education courses with lengths from 2-days to 2 weeks using mixed interactive and didactic methods have led to increases in knowledge and skills (Sibley, 1982), but not necessarily patient care or referral patterns (Ross and Lawton, 1984). Courses aimed at improving joint injection skills do lead to an increase in number of injections given, and a reduction in NSAID use (Griffin and Barry, 1981; Stross and Bole, 1985; Grahame et al, 1986). After an orthopaedic GP fellowship consisting of weekly attendance at hospital out-patient clinics over 12 months, GPs felt they had gained important links with the local orthopaedic department, in addition to improved knowledge and skills

(Duckett and Casserly, 2003). A bespoke arthritis education programme such as “Getting a grip on arthritis” (Glazier et al, 2004) was successful at demonstrating the outcome of improved patient satisfaction in several domains (medication, management strategies, community resources) rather than focusing on any self-reported increase in GP knowledge and skills. This may seem a sensible idea, as better patient care is ultimately the most important outcome whatever its mechanism (echoed by Woollard, 2008). The “Joint Adventures” programme (Petrella and Davis, 2007), published after the completion of this project, was pragmatic with sound methodology, using a multi-professional group to define its content and led to an increase in several outcomes, including, knowledge and change in behaviour. These latter studies were both national Canadian studies recruiting large numbers of GPs. The MSK training course described in this chapter used many areas of good practice described in these papers (case-based learning, prior needs assessment) and could be used in a national study. Transferability of intervention results to other environments may be difficult, as resources, professional and patient needs will vary according to region. Outcome measures will be further discussed in section 7.5.

We have shown that is feasible to develop and deliver an innovative, theory-informed educational intervention for a group of north London GPs that is evaluated highly by participants. But can we say that it has led to improved delivery of care to patients, the “gold-standard” outcome measure in a medical education intervention? The following sections will discuss this using a critical discussion of the methods used in this thesis and in the literature, finishing with recommendations for further work.



## **7.4 Critical discussion of the thesis methods**

### **7.4.1 Response Rate to the needs assessment questionnaire**

As described in chapter 2, the response rate to the needs-assessment questionnaire was 51.3%, limiting the generalisability of results. The NoCTeN list of GPs did not contain all the GPs in Camden and Islington PCT and was itself a possible cause of bias. The GPs on the list could be argued to have an inherent interest in research and therefore different characteristics to a “typical” GP (age, gender, type of practice, ability to treat MSK disorders), leading to so-called selection bias. Access to the PCT databases of GPs would have provided a more complete picture of practising GPs, which may have increased generalisability. Further work needs to be done in identifying strategies to encourage hard-to-reach GP groups to attend the MSK educational intervention.

### **7.4.2 Piloting of the needs assessment questionnaire**

As previously indicated, the questionnaire was piloted on a group of doctors and educationalists at the research centre. Although the review and piloting process led to meaningful changes in the structure and content of the questionnaire, it would have been appropriate to pilot the questionnaire amongst a wider group of GPs in the PCT, rather than just those with academic links to the research centre. This would have helped reduce the ambiguities and uncertainties arising from using the questionnaire in practice and with hindsight, some of which are described below:

1. Clarifying the exact nature and duration of their postgraduate experiences in managing MSK conditions.

2. In question 4 asking about CME experiences, further instruction could have been given to help respondents discriminate between what constituted a lecture and a course. Courses could contain lectures, possibly underestimating the prevalence of frequency of lectures as a CME resource.
3. Further piloting would have refined the MSK subject headings in question 7. As mentioned before, gout, chronic pain syndromes and polymyalgia rheumatica could have been included.

### **7.4.3 Interviews**

With hindsight, both focus group and individual interview methods would have facilitated the triangulation of data. Focus groups have been used successfully in healthcare education needs assessments (Tipping, 1998), often as a means of validating other forms of data collection such as questionnaires. With the experience of the poor response rate to the needs assessment questionnaire described in chapter 3, I elected not to pursue this route, and continued with the individual interview approach. In addition to understanding GP perception of their learning needs, local patients with MSK disorders could also have been asked about their views on the content of a training course based on their experiences.

From my sampling, I would have liked to interview equal numbers of men and women. Unfortunately only 1 male GP was able to be recruited. This could have introduced bias into the interviews, as we have seen from the literature and

questionnaire data that men and women assess their confidence differently. Interviewing all 38 GPs individually who expressed an interest in taking part in further discussions was not practical. The case study approach allowed small numbers to be used, but as mentioned before may limit transferability of the results to other settings. The research was focusing on the needs of GPs from a single geographical area, so I was happier that the interview data was valid in this context. A limitation of the data obtained from the transcripts was that I did not ask the respondents to confirm the data gathered from the interviews. This would have given me more confidence that the transcription was a fair representation of what actually took place, and provide another axis for triangulation.

Other ways of maximizing the transferability of the results would have been to sample GPs using other features based on the type of practice (e.g. single handed), geographical location of practices or teaching/non-teaching practices. The data gained using these methods may have had slightly different emphases, but I feel that the overarching themes would have been very similar.

#### **7.4.4 MSK training course**

##### **7.4.4.1 Extent to which MSK training course met educational theory requirements of a successful intervention**

As described in the Introduction (see section 1.9.6) the educational theories that were seen as most useful in underpinning the MSK training course were reflective practice and experiential learning using a mixture of problem-based

and didactic teaching methods. The course length of 1.5 days was less than I would have liked, but this was chosen to maximise the ability of GPs to attend. The course content was possibly too much to allow true reflection on practice, but again this was balanced against the GPs being able to cover as many of the subject areas highlighted in the needs assessment as possible. In the future, a follow-up course after a short period of time (4-6 weeks) would be useful to evaluate exactly how the GPs had reflected and used their new knowledge and skills when back in practice. The course was popular in that it allowed GPs to practise their clinical skills on patients, but as this was in a non-primary care setting, this approach may not have facilitated fully the transfer of knowledge into routine clinical practice. The follow-up questionnaires after the course provided some evidence of reflection and incorporation of new knowledge into practice from the free text comments, but other outcomes could have been measured (described later in this chapter) that would have given more support to the success of the reflective/experiential approach. Given the time constraints, PBL was used in discussions around case scenarios in back pain and knee pain for example, but not as much as it could have done if the course were longer or if a follow-up course was arranged. This would have encouraged GPs to find the information for themselves and bring it back for discussion.

#### **7.4.4.2 Course delivery and evaluation**

The response rate to the invitation to attend the MSK training course was 52%. This was lower than expected, taking into account that the 75 GPs who expressed an interest in attending a training course self-selected themselves as

being interested in learning about MSK disorders. With that in mind, the 35 GPs who attended the course were the most motivated and who had reflected that they needed more training in managing MSK disorders, or that it was in their “comfort zone” (Cantillon and Jones, 1999). As those authors mention, the most important group to target are the GPs who would not normally choose to attend an MSK training course. Sufficient time was given to allow GPs to alter their commitments to attend the course, and a choice of dates was given to choose from. I emphasized that the course was free in order to maximise ability to attend. More GPs may have attended if funds had been available to pay for locum fees if GPs had to leave a clinic in order to attend. There is now no national set locum fee framework. The British Medical Association provides help in calculating individual locum fees based on a number of workplace factors (British Medical Association, 2008). At Royal Free and University College Medical School between 2001-2004, GP facilitators for medical student teaching sessions were paid £125 per half-day. Using this as a guideline, the cost for 35 GPs to attend a 1.5 day training course would be £13125, well beyond the financial scope of the project funded by the Arthritis Research Campaign. In the CME literature looking at primary care education in MSK disorders, little or no mention is made of this aspect of recruitment. This may reflect funding differences in primary health care worldwide, or lack of acknowledgement of its importance. There is also an ethical dimension to paying doctors for their time to attend a CME event that should be part of their professional development.

The data on changes in confidence in questionnaire 2 are limited by a poor response rate of 48%. These questionnaires were emailed to all participants, with the view that it would increase response rate as it would be seen directly by all participants without postal delays. However, GPs may have elected to delete the email without opening it at all. A dual approach of postal and email versions may have increased response. In addition, as these GPs were motivated to attend the course, it would have been acceptable to use the telephone to complete the questionnaire. In questionnaire 2, confidence in managing common MSK conditions was expected to drop after 6 months with no further top-up training. If this is happening in the motivated group of GPs, it is a concern to extrapolate these findings to the effects in hard-to-reach groups.

No further evaluation took place after questionnaire 2 at 4-6 weeks after the course. Further questionnaires could have been administered to assess changes in self-perceived confidence with time. Further evaluation in the form of a practical assessment such as an OSCE was not acceptable to GPs in this study which was a significant limitation to demonstrating the course had a measurable effect on knowledge. The negativity towards an objective peer-led assessment was surprising and may have been due to the relative unfamiliarity of this group of GPs to the concepts behind such an assessment in medical education. A younger cohort of GPs that had experienced OSCEs in their undergraduate training may have been more willing to take part in an OSCE. With the advent of relicensing and revalidation by the GMC (GMC, 2008), all medical practitioners will need to become familiar and comfortable with

undergoing objective assessments of their knowledge and skills in order to demonstrate their ability to continue in practice. Indeed, the new Membership of the Royal College of General Practitioners (MRCGP) examination for GP trainees contains a clinical skills assessment in the form of simulated consultations using actors and patients using the OSCE format. The absence of the planned measurable outcome in this study leads us to a more widespread discussion of measuring outcome in educational interventions and their applicability in this project.

## **7.5 Measuring outcomes in educational interventions**

A key issue was the conversion of theoretical knowledge into practical ability, an area in which the GPs expressed difficulty, particularly with joint examination, joint injection and interpretation of blood tests. A common problem in CME intervention studies, including that described in this thesis, is the difficulty in providing evidence that the intervention leads to a long-term change in practice beneficial to patient care. This is the only outcome that is important, but the most difficult to evaluate! Studies continue to evaluate short-term satisfaction and changes in knowledge, which tend to provide positive results. There may be publication bias in that negative studies are less likely to be published, although they are important in allowing educators to understand the factors that do and do not facilitate long-term changes in knowledge and behaviour. The huge variety of primary care environments also make it difficult to transfer findings from one study setting to another. As in our study, participants may not agree with the outcome measures being suggested. There is also of the nature of

participants involved in CME intervention studies. As in our case, they are often volunteers from inherently interested groups, and already performing at or above expected levels. Any change in their performance is going to be small and difficult to measure, the so-called “ceiling effect” (Davies et al, 1999)

Longer term outcome measures that could have been used will be discussed from the viewpoints of the GP, patient and delivery of care process.

### **7.5.1 GP outcomes**

Information that assessed changes in knowledge and behaviour from the GP viewpoint could have been obtained subjectively from the GPs themselves or objectively using quantitative and qualitative approaches. Subjective data could have been collected in the form of diaries completed by GPs after seeing patients with MSK problems. The diary would contain information about the consultation, outcomes arising from the consultation and a section for the GP to reflect on how the training course had changed GP confidence in diagnosis and management. This method has been used to assess vocational trainee learning needs in MSK disorders. For direct comparison, it would have been useful for the same GPs to complete the diary prior to the training course, allowing a more rigorous assessment of the effect of the training programme. This approach would have taken significant time to pilot and implement and was not possible in the timescale of the project. The diary may also be a source of bias, with GPs only including positive cases that showed how the course had changed their skills and approach to patient care.



Direct observation of GP consultations with patients with MSK disorders was another possible approach to gain a more objective assessment of GP knowledge and skills. This would have required a further application to the local ethics committee and informed consent from the patient in addition to adherence to data protection legislation if the consultations were to be videotaped or audiotaped. GPs have been used to videotaping consultations as part of the assessment for previous versions of the MRCGP qualification, so this approach may have been perceived more positively by the GPs taking part in the training course. Data from the consultations could have been used to assess clinical and management skills. A videotaped consultation viewed by both the GP and facilitator could provide a powerful tool to change practice using a reflective practice model. A refinement of the observed consultation model that has been used in a cohort of Dutch rheumatologists. (Gorter, Rethans, Scherpbier et al, 2001). They agreed to allow standardised patients with MSK disorders to attend their clinics, although the doctors were blinded to the identity of these patients and when they would attend the clinic. This approach also has ethical issues that would need further approval, as well as more detailed discussions with the GPs attending the training course to ensure that they felt comfortable with this assessment method. As with diaries, observation prior to the training course would have been important. The observation approach requires significant time to be set aside to collect and evaluate the data within the constraints of GPs busy clinics and was not possible to develop and deliver in the timescale of this project. More than one observer would be required, and they would need training which again would involve a significant time commitment.

### **7.5.2 Patient outcomes**

Arguably, this is the most important outcome for any intervention that aims to improve knowledge skills and management of patients with MSK disorders. Patients with MSK disorders seeing GPs attending the training course could have completed a questionnaire that asked about how satisfied the patients were with the consultation in domains such as understanding of patient perspective, ability to provide a diagnosis and agreed management plan, and communication and whether their perceptions had changed compared to previous consultations. Patients could have been asked to complete diaries that documented amount and type of pain relief taken after a consultation with a trained GP to look for any changes. Patient pain quality of life and disability levels using visual analogue scales and validated indices such as the Short Form-36, Health Assessment Questionnaire or disease-specific scales such as the Western Ontario and McMaster Universities OA Index (WOMAC). This latter approach was used in Canada (Chassany, Boureau, Liard et al, 2006) in patients with OA whose GPs had attended a training course, and showed improvements in pain and disability scores and improved use of analgesia after 2 weeks. If this approach was to be used in the North London GP cohort, evidence of benefit immediately after the training course may be expected. The key is in demonstrating similar findings after an extended period of time after training. Therefore the questionnaires would ideally be repeated at intervals of 3 and 6 months, but unfortunately this was not within the scope of the project.

### **7.5.3 Delivery of care process outcomes**

This comprises a number of measures that act as surrogates for quality of care. Referral patterns could have been used as an outcome measure of the training course. This could have been achieved by studying the number of referrals made by GPs in fixed time periods before and after the training course. This data could have been obtained direct from the GP surgeries, or by selecting referral letters from the appropriate GPs received by the local hospital rheumatology unit. The former approach would be more likely to give accurate figures, but would depend on the GP and/or administrative staff identifying the letters to pass on. GPs in the project area did not all refer to the same rheumatology unit, meaning that in order to catch all referrals, letters received at all local hospitals would have to be reviewed, requiring a significant time commitment. The raw quantitative data on numbers of patients received would not really tell us about the confidence and skills of the referring GP. An increase in referrals could be seen as a positive outcome in that GPs are identifying more patients needing further investigation and management. A decrease in referrals could also be seen as positive in that GPs are more aware of management plans for patients that do not require secondary care input, perhaps by better use of community services and the multidisciplinary team. Therefore qualitative data could also be needed to provide context to the raw numbers. Qualitative data could be in the form of GP semi-structured interviews relating to a number of referrals made, or an independent assessment of the content of GP referral letters, the latter of which could be seen as a more subjective and judgemental approach (Samanta and Roy, 1988). Referrals to community services or the

multidisciplinary team could also be used as an outcome measure, and again it would have more value if correlated with qualitative data from patients, GPs and allied health professionals.

Prescription patterns could also have been used as an outcome measure to look for appropriate prescribing of analgesia, for example use of simple analgesics and NSAIDs in MSK disorders such as OA, as used in a Canadian study (Rahme, Choquette, Beaulieu et al, 2005). This data could have been obtained from GP surgery databases and as stated earlier, the raw data may show an increase or decrease in prescription, the reasons for which could be elaborated with qualitative data. Changes in prescription over time after the training course would also be useful information to evaluate.

### **7.5.3 The randomised controlled trial**

The gold standard of evidence in scientific research is the randomised controlled trial. In the context of this project, GPs who responded to the needs assessment questionnaire and stated they wanted to attend an MSK training course could have been randomised into 2 groups. One group would have receive the course and the other receive no training, The effect of the training on one or more of the outcome measures described above could then be evaluated. This would perhaps give more objective “evidence” of the effectiveness of such a course. From an ethical viewpoint, all GPs allocated the “no training” group would be given the training after the conclusion of the trial. In order for this approach to have sufficient validity and transferability, the characteristics of the

two GP groups would need to be comparable with regards to demographics, experience and even geographical location. A larger pool of GPs than agreed to take part in the project would have been required to achieve this.

#### **7.5.4 Alternative outcome measures that could have been used in this project: Conclusions**

Many outcome measures are chosen for their ease of use and interpretation rather than clinical utility, and those measures used eventually in this project could be criticised for reliance on self-reported GP assessment of confidence rather than more objective measures. The implementation of the post-course OSCE would have provided valid and reliable measures of performance, and it was unfortunate that this method could not be used. Alternative methods would have required significant time to develop, pilot and implement which were beyond the scope of the project. Triangulation of several methods such as GP observed practice, patient satisfaction and quantity and quality of referrals to secondary care would have provided more robust evidence of the utility of the MSK training course. Of course, all the alternatives described above are affected by a huge number of contextual factors other than the educational intervention, making it difficult if not impossible to disentangle the differential effect of the intervention itself. In order to have measured these outcomes, it would have been essential to recruit and train another researcher to help with data collection and evaluation. A GP with a special interest (GPwSI) in rheumatology would have been an ideal person, as they could have been a bridge between primary and secondary care, perhaps increasing GP recruitment and interest in the training course and

helping to allay any concerns regarding assessments of knowledge and skills such as the planned OSCE.

## **7.6 The future**

Hull (1991) reported that in 1979, only 40% of medical schools provided formal rheumatology clinical teaching experience. The publication of “Tomorrow’s Doctors” by the General Medical Council (General Medical Council, 2003), together with the development of the GALS screen, has meant that rheumatology is now part of all medical school curricula, although there is wide variation in its duration and timing in individual school courses (Kay and Walker, 1998). So it is hoped that all students entering the world will have some knowledge of how to examine the MSK system.

The challenge is to improve education for GP trainees in managing MSK disorders. With the increasing importance of MSK disease in recent government documents such as the Darzi report (chapter 1.6.4), the time is right for those in charge of postgraduate GP education to improve teaching and learning about these conditions. Further work needs to be done on developing high-quality, valid and reliable outcome measures for educational interventions that can be applied to a variety of settings. This is the main challenge, to understand the educational and individual contextual factors that affect the key process of converting knowledge to practice.

## **7.7 General conclusions**

Notwithstanding the limitations of the study, the data from this thesis has confirmed that increased GP education about management of MSK disorders is needed, and the research has defined approaches that are successful in the planning and delivery of educational interventions in MSK disorders. With the move to more patient care located in the community, it is vital that we use these approaches to further develop educational interventions and outcome measures with sound educational bases that will deliver safe and effective care to patients with MSK and other chronic diseases. This will require a coordinated approach from all those involved in undergraduate and postgraduate education to ensure that all doctors have the core skills to be able to manage MSK conditions, and that strategies are developed at all levels of GP postgraduate training, from the Deaneries to PCTs to specialist societies such as the Primary Care Rheumatology Society and the British society for Rheumatology increase all GPs knowledge and skills, which will then lead to the more effective delivery of care to patients.

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## **List of Appendices**

Stored on attached CD-ROM as PDF files

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