Disparities in detention: An investigation into relationships between sociodemographic status and compulsory psychiatric treatment among children and adolescents

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PhD Thesis

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Declaration

I, Susan Walker, 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 my thesis.

Signature: Date: 30/04/24

Abstract

Disparities in involuntary psychiatric hospitalisation between population subgroups have been identified in adults, but little is known about the factors associated with involuntary hospitalisation in children or adolescents. Improving our understanding of people's risks of detention from childhood may help to highlight where interventions could be targeted to help reduce life-long healthcare inequalities.

I conducted two international systematic reviews, meta-analyses, and narrative syntheses to investigate the clinical and sociodemographic factors associated with involuntary hospitalisation across the lifespan. I then used the Clinical Record Information Search (CRIS) database to identify a large cohort of children and adolescents (n = 1265) who were inpatients in the South London and the Maudsley (SLaM) NHS Foundation Trust over a 13-year period and compared those who were in hospital voluntarily and involuntarily.

I found that there are clinical and sociodemographic factors associated with involuntary hospitalisation across all ages, including a diagnosis of psychosis, more severe illness, police involvement in admission and being from a Black rather than White ethnic group. While ethnic and racial disparities in the use of involuntary hospitalisation among adults have been well documented, this has not previously been researched in children and adolescents. Using CRIS, I was able to investigate this further and found that inpatients aged under 18 in SLaM NHS psychiatric hospitals from Black groups were more likely than those from White groups to have an involuntary rather than voluntary hospitalisation, even after adjusting for age, gender, diagnosis, severity of illness, presence of risk, levels of deprivation, previous mental health service use and pathways into care.

My findings suggest that racial disparities in the use of involuntary hospitalisation may start in childhood and potentially contribute to a cycle of inequality that continues into adulthood. Understanding the systemic factors underlying these health-care inequalities and the barriers to accessing less coercive psychiatric treatment throughout the lifespan should be a research and policy priority.

Impact statement

Compulsory care contradicts the ethos of modern medical ethics and is often experienced negatively by service users and their families. It can also be associated with poor long-term mental health outcomes. Reducing the use of involuntary hospitalisation is a public health priority. However, the number of people, including children and adolescents, who are being treated involuntarily for mental disorders has been growing in some countries, including the UK. To date, there has been very little attention given to the risk factors for involuntary psychiatric hospitalisation among people under 18 or how these might differ in adults. In this thesis, I have addressed this knowledge gap.

I have identified clinical, service-level and socio-demographic risk factors for involuntary hospitalisation among children, adolescents, and adults in two international systematic reviews, meta-analyses, and narrative syntheses, which have both been published in high impact peer-reviewed journals. One of these also provided evidence for the Independent Review of the Mental Health Act and a summary was published in the final report. The other paper is accompanied by a podcast which I recorded with a co-author and the editor of The Lancet Child and Adolescent Health.

In a large cohort of inpatients from NHS psychiatric hospitals in South London over more than a decade, I also found that children and adolescents from Black groups were more likely than those from White groups to have an involuntary rather than voluntary hospitalisation. This association remained even after adjusting for diagnosis, severity of illness, risk, deprivation level and adverse pathways into mental health services.

My findings have important research implications as they highlight the need for urgent further investigation into this racial disparity, as well as revealing more important knowledge gaps, including how decisions are made to use involuntary hospitalisation in people of all ages, how risk is assessed and what interventions may help to reduce the need for involuntary hospitalisations.

The findings also have clinical and policy implications as they highlight where interventions to reduce the use of involuntary hospitalisation could be targeted. They show that interventions to address longstanding ethnic and racial disparities in the use of involuntary hospitalisation need to start much earlier than has previously been considered, as cycles of inequality are already being established in childhood. Ensuring that community services provide consistent, appropriate, and accessible care to people from ethnic minority groups of all ages is another important intervention. Finally, the lack of a clear evidence base for the use of involuntary hospitalisation must be addressed, initially through improved national (and ideally eventually international) data collection which includes who is being detained and why, their experience of the process, and their outcomes.

I have presented findings from my thesis at a national conference for Child and Adolescent Psychiatrists in London and an international conference (ENMESH) in Portugal. I have been

invited to present some of the findings at the Royal College of Psychiatry International Congress in June 2024. I am also preparing two further papers for publication.

During the PhD, I was awarded a Nuffield Fellowship to spend three months working in the Parliamentary Office for Science and Technology (POST), during which I wrote a briefing for members of parliament about involuntary hospitalisation among children and adolescents. As a result of this work and the research I have done for this thesis, I was invited to give oral evidence to the Joint Select Committee on the Draft Mental Health Bill, who went on to include a significant section on children and young people in their final report.

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Susan Walker, Phoebe Barnett , Ramya Srinivasan, Esha Abrol, Sonia Johnson

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SW designed the study, did the search, data extraction, and analysis, and wrote the paper. RS contributed to the search, data extraction, quality assessment of included studies, and the narrative synthesis. PB contributed to data analysis. EA contributed to quality assessment. SJ provided supervision to the project and contributed at all stages. SW and RS accessed and verified the data. All authors have contributed to subsequent drafts of the paper and approved the final version. The corresponding author had full access to all data in the study and had final responsibility for the decision to submit for publication.

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Statement of contribution

Study 1: Clinical and sociodemographic factors associated with involuntary psychiatric hospitalisation among adults: A systematic review, meta-analysis and narrative synthesis (Chapter 4)

I drafted the original research protocol and led the screening and data extraction, independently screened papers, extracted data, wrote the statistical analysis plan, supported with the statistical analysis, and wrote the paper. I was supported with this by Euan Mackay. Professors Johnson and Lloyd-Evans contributed to the research protocol. Phoebe Barnett led the statistical analysis. Luke Sheridan Rains , Monica Leverton , Christian Dalton-Locke , Kylee Trevillion all supported with the screening of studies and extraction of data. I independently completed the narrative synthesis and wrote the first draft of the paper. All authors contributed to the final report.

Study 2: Clinical and sociodemographic factors associated with involuntary psychiatric hospitalisation among children and adolescents: A systematic review, meta-analysis and narrative synthesis (Chapter 5)

I designed the study, carried out the search, the data extraction, the statistical analysis, and wrote the paper. Ramya Srinivasan supported with the search, data extraction, and quality assessment of included studies. Phoebe Barnett supported with the data analysis. Esha Abrol supported with the quality assessment. Professor Johnson provided supervision to the project and contributed at all stages. I independently conducted the narrative synthesis and wrote the first draft of the paper. All authors approved the final version.

Study 3: Social and clinical factors associated with Mental Health Act use among children and adolescent inpatients: A historical cohort study using electronic health records (Chapter 7)

I designed the study with support from Dr Johnny Downs, Dr Richard Hayes, and Megan Pritchard. I wrote the extraction plan with Dr Daniela Fonesca de Freitas, whose main area of interest was in people aged over 18. The extraction itself was carried out by the CRIS team. I conducted the statistical analysis independently, with support from Dr Johnny Downs and Dr Daniela Fonesca de Freitas. I independently wrote up the study.

The data extracted from CRIS using the extraction plan Dr Fonesca de Freitas and I created, was also used in the published study mentioned in chapter 7, in which I am listed as second author. As well as supporting in the study design and creating the extraction plan with Dr Fonesca de Freitas, my role in this publication included contribution to decisions about how to conduct the analysis and interpretation of the data. As a clinician, I helped to think through the clinical significance of the findings. I also contributed to several drafts of the paper and approved the final version.

Study 4: An investigation of the association between pathways to care and service use and involuntary hospitalisation among children and adolescents (Chapter 8)

I planned and designed the study, conducted the analysis (which was reviewed by Dr Johnny Downs), and independently wrote up the findings.

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I am extremely grateful to my primary and secondary supervisors, Professor Sonia Johnson and Professor David Skuse, for their continuous support and mentorship.

I would like to thank Professor Joe Collier, who first suggested that I consider academic psychiatry when I was in medical school and even in retirement continues to check in on me and always challenges me and makes me think. Professor Argyris Stringaris who offered me a chance to do some research with him despite my lack of research background and encouraged me to take an academic post when I was lacking the confidence to do so. Professor Isobel Heyman who has taught me so much and continues to inspire me and be my role model. Dr Richard Hayes, Megan Pritchard, Dr Daniela Fonseca de Freitas and all the CRIS team who showed such interest in my project from an early stage and always had time to help. And especially Dr Johnny Downs for introducing me to the idea of using CRIS in the first place - thank you for your ongoing friendship, support, and encouragement. Thank you to Professor Helen Roberts for encouraging me to apply to the NIHR a second time and for believing in me and the work I wanted to do. And thank you to Professor Anna Lavis for your thoughtful discussions, support, and seemingly endless patience.

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Thank you to my mum and dad for encouraging a lifelong love of learning and for not flinching – too much – when I took this rather literally and have never really stopped being a student. I want to thank my uncle Adrian for inspiring me to follow a career in academia. I really don't think I would have done all this Adrian if it wasn't for you. Thank you to David for everything, and for being the one who helped to encourage me to look more into the Mental Health Act all those years ago. To my friends who've put up with not seeing or hearing from me much recently but who have never not been there. And finally, to my husband and daughter without whom I would have finished this PhD a lot more quickly! Thank you for making sure I've always been loved even in the last few months when I know this has not always been easy.

Finally, I'd like to say thank you to the 14-year-old girl I was called to see one Friday afternoon after she had been brought into the local adolescent unit by police on a section 136. Her silent acceptance of the MHA assessment and outcome sent me scurrying off into the literature for reassurance and evidence that we had done the right thing. Instead, I found further silence, inequity, frustration, an ever-growing interest in mental health law and ethics and the idea for this thesis, which – and I hope she won't mind - is dedicated to her.

Contents

List of Abbreviations

BDI-II - Beck Depression Inventory-II
BPRS - Brief Psychiatric Rating Scale
CA – Children Act 1959
CBCL - Child Behaviour Checklist
CGAS – Childrens' Global Assessment Scale
CI – Confidence interval
CRC – Convention on the rights of the child
CRIS – Clinical research system
CRPD – Convention on the rights of people with disabilities
DHSC – Department of Health and Social Care
DSM - Diagnostic and Statistical Manual of Mental Disorders
ECHILD - Education and Child Health Insights from Linked Data
EHR – Electronic Health Records
ENMESH – European Network for Mental Health Service Evaluation
FINCH - Development, Feasibility Testing and Pilot Trail of a Crisis Planning and Monitoring intervention to Reduce Compulsory Hospital
GAF - Global Assessment of Functioning
HAM-D - Hamilton Depression Scale
HES - Hospital Episode Statistics
HoNOS- Health of the Nation Outcome Scores
HoNOSCA - Health of the Nation Outcome Scores for children and adolescents
ICD - International Classification of Disorders
ITAQ - Insight and Treatment Attitudes Questionnaire
MHA – Mental Health Act 1983 (amended 2007)
NLP - Natural Language Processing
NHS - National Health Service
NPD – National Pupil Database
OR – Odds Ratio
PANNSS - Positive and Negative Symptom Scale
PCREF - Patient and Carer Race Equality Framework
POST - Parliamentary Office for Science and Technology
REC – Research Ethics Committee
SLaM – South London and the Maudsley NHS Foundation Trust
STAI - Stress Trait Anxiety Inventory

Chapter 1. Introduction

1.1 Chapter summary

In this chapter, I begin by defining involuntary psychiatric hospitalisation and introduce some of the reasons why reducing its use is the focus of international policy. I then explain why understanding more about the sociodemographic and clinical risk factors associated with involuntary hospitalisation could support this objective. Next, I describe why research into child and adolescent mental health treatment is so important and explain how little is known about the use of compulsory psychiatric hospitalisation among those under 18, including the sociodemographic and clinical risk factors for its use in this age group and how these may differ from the risk factors in adults. Finally, I provide an overview of what will be included in each chapter of the thesis.

1.2 Involuntary psychiatric hospitalisation

Involuntary or compulsory psychiatric care refers to the admission to hospital and treatment of a person with a mental disorder against their will. Mental health laws which authorise the compulsory hospitalisation of people with a mental disorder are used worldwide and the World Health Organisation (WHO) has recently reported that approximately 10% of admissions to psychiatric inpatient facilities globally are involuntary.[1] Despite its widespread use, compulsory psychiatric hospitalisation contradicts the principle of autonomy, which is central to modern medical ethics.[2] It can also lead to negative outcomes such as disengagement from mental health services,[3–5] and can be experienced adversely by patients and their families.[6–8] In addition, there is evidence to suggest that mental health legislation is not applied equally across population groups.[3,9,10] People from ethnic minority groups have consistently been found to be more likely to be subject to coercive treatment than people from majority groups, although the reasons for this remain complex and disputed.[11–13] There are also wide and largely unexplained variations in the rate of involuntary hospitalisations both intra- and inter-nationally.[14]

Since the 1950s, when deinstitutionalisation of mental health services from inpatient treatment to community care dominated healthcare reforms in Western Europe,[10] treating people against their will has increasingly been considered to be an intervention of last resort, which should only be implemented when no alternatives are available.[15–17] In addition, the

United Nations Convention of the Rights of Persons with Disabilities (CRPD), which was published in 2007 and has since been ratified by 177 countries, including the UK, states that, "disability (which includes mental illness) shall in no circumstances justify a deprivation of liberty".[18] However, rates of involuntary detention in England have at least trebled since the 1980s and doubled since the 1990s.[19] A recent review of rates of involuntary hospitalisation internationally found that these had increased in 11 of the 18 countries included in the study, with the annual number of involuntary hospitalisations having risen more in England over the past 10 years (4.0% annual increase) than all other countries, with the exception of France, Spain and the Netherlands.[14] The reasons behind the rise in rates remain poorly understood.[20] In this context, the promotion of a broader human rights-based approach to mental health care, and expanding the provision of voluntary options for mental health support and treatment has become the focus of growing international policy momentum.[17,21–24] A greater understanding of the sociodemographic and clinical factors which could be driving involuntary hospitalisation has been highlighted as important to this process as it could support the development of effective, targeted interventions to reduce the use of coercive psychiatric practice.[25–27] It may also provide further clarity about the international variation in rates of coercive practice and why these are rising in certain areas and not others.[28]

Alongside ethnicity, other factors that have been reported to be associated with involuntary psychiatric hospitalisation include a diagnosis of psychosis,[29–32] male gender,[29–31,33] risk of aggression,[31,34,35] absence of alternative community services,[36] and socioeconomic deprivation.[3,37] However, research to date has been inconclusive and the risk factors for involuntary hospitalisation remain poorly understood. In addition, there is very little understanding of the clinical or sociodemographic factors that are associated with involuntary hospitalisation among children and adolescents as most of the literature in this field, including that which looks at the associations between involuntary hospitalisation and ethnicity, excludes those aged under 18. This thesis aims to understand which factors are associated with involuntary hospitalisation across the life course. A greater understanding of the similarities and differences between the risk factors for involuntary psychiatric hospitalisation across childhood, adolescence and into adulthood may help to clarify why rates of involuntary hospitalisation vary so widely among population subgroups. It is also hoped that a 'life course', rather than a uniquely child and adolescent focus, will increase the potential policy

impact of this research as it may highlight if different interventions are needed to help reduce the use of coercion in different age groups. In addition, as the literature in this field is so much more advanced in adults, a greater understanding of the risk factors for involuntary hospitalisation in people over 18 would be helpful in identifying candidate variables for those under 18.

In this thesis I distinguish between involuntary and voluntary patients based on the legal framework of the hospitalisation, but we know that people admitted to hospital 'voluntarily' (i.e. without the use of mental health legislation) can also experience compulsion and coercion.[38] The subjective experience of compulsion is an area which requires much more understanding but is beyond the scope of this thesis. Most mental health legislation also includes provision to hospitalise people in secure units who have committed a crime while mentally unwell or who become mentally unwell in prison, but I do not include these patients in this thesis as they represent a specific group with different pathways into mental health services, different hospitals, and different follow up arrangements.

1.3 Involuntary psychiatric hospitalisation in children and adolescents

The accepted age ranges for childhood and adolescence vary widely and are informed by biological, social, cultural and legal definitions.[39] The WHO refers to adolescence as spanning from 10 to 19 years.[40] The United Nations Convention on the Rights of the Child (CRC) defines those under the age of 18 years as children,[41] as does the Children Act (CA) 1989, which provides the legislative framework for supporting child welfare in England.[42] Child and Adolescent mental health services in most areas of the UK and across most of Europe provide support to people up to the age of 18, when they transition to adult services.[43,44] As this thesis focuses on mental health and mental health law, I define age ranges with reference to these fields and therefore refer to those under 18 as children and adolescents, and those aged 18 and over as adults.

Many mental health disorders emerge in adolescence.[45] The onset of a first mental disorder has been found to occur before age 14 in one-third (34.6%) of individuals worldwide, and by age 18 in almost half (48.4%), with a median age of onset of 18 years.[46] The number of

children and adolescents experiencing mental health problems appears to be rising in some countries, including the UK where rates of a probable mental disorder among those aged 7 to 16 has increased from 1 in 9 (12.1%) in 2017 to 1 in 6 (16.7%) in 2020.[47] Suicide is now the fourth leading cause of death among 15 to 29 year olds worldwide.[1] Despite the evidence that mental health problems are a leading and increasing cause of health-related disability in this group, with lasting effects throughout life, child and adolescent mental health services internationally are chronically underfunded and it is thought that less than half of the young people who need mental health treatment receive it.[48,49] In addition, there is a large gap in research into the effective prevention and treatment of mental health problems in children and adolescents.[50]

In most high-income countries, including the UK, children and adolescents with mental health difficulties are primarily and preferably offered support in community mental health services.[51] A 2021 UK report by the Commons Health and Social Care Committee on the mental health of children and young people found that in "most cases the most compassionate and effective care" for those under 18 "is in the community".[52] It recommended that the Department of Health and Social Care accelerate the shift towards increased community-based provision and a reduced inpatient bed base as a national priority. Child and adolescent inpatient services exist internationally to provide care to young people with severe mental health difficulties who present a high level of risk or for whom appropriate treatment and/or diagnostic clarity cannot be provided in a community setting. Although the small amount of research in this field has found that there can be significant benefits of inpatient treatment for some young people, including comprehensive assessment, monitoring, validation and an opportunity to break cycles which might be perpetuating poor mental health, these have to be weighed against the risks of removing a young person from family, friends and school and the potential developmental disruption this could cause.[53] Other reported adverse effects of inpatient treatment for children and adolescents include contagion (for example, young people copying acts of self-harm), exposure to trauma, and experiencing restrictive practices such as seclusion and restraint.[54,55]

Very little research has specifically considered involuntary psychiatric hospitalisation among children and adolescents. Children in psychiatric hospitals against their will are, however,

included in a 2019 UN global report into children deprived of their liberty, who are referred to as one of "the most vulnerable, invisible and forgotten groups in societies across the globe".[56] The report finds that because children are in their formative years, deprivation of liberty can have "highly detrimental effects on their physical and mental health, their further development and their life," and strongly recommends that all States try to, "significantly reduce the number of children held in places of detention and prevent deprivation of liberty before it occurs, including addressing the root causes and pathways leading to deprivation of liberty".[56] However, the involuntary hospitalisation of children and adolescents appears to have been increasing in several countries, including Finland and the UK, although accurate and up-to-date data are scarce.[57–60] In England, the number of children and adolescents hospitalised under the Mental Health Act (MHA) 1983 was not routinely collected until January 2016.[61] This data continues to be incomplete, difficult to interpret and varies between data sources, but it appears that the proportion of people aged under 18 in psychiatric inpatient units under the MHA has increased from around 40% in 2016 to over 80% in 2021.[62] A Finnish study has also reported a large increase in rates of involuntary hospitalisation among children and adolescents in Finland from 2.4 per 10 000 population in 1995 to 7.2 per 10 000 in 2000.[57] However, a study from Germany reported a significant decrease in the use of involuntary admissions from 2004 to 2009.[60] There are no studies which compare the use of involuntary hospitalisation among under 18s internationally, and the factors driving the variation in use of compulsory psychiatric treatment among children and adolescents between countries and over time remains largely unexplained and unexplored. It is also unknown if there are differences in the use of involuntary hospitalisation between ethnic groups among children and adolescents in the same way as there are for adults. Greater understanding about the risk factors for involuntary hospitalisation among children and adolescents may help to understand more about the drivers of involuntary hospitalisation in adults too, as well as contributing to the development of targeted, early interventions to help to reduce the need for coercive treatment and improve equity of access to mental health care for people of all ages.

1.4 Overview of thesis structure

The primary research questions for this thesis are:

- What are the clinical and sociodemographic risk factors associated with involuntary hospitalisation among adults?
- What are the clinical and sociodemographic risk factors associated with involuntary hospitalisation among children and adolescents?
- How do the risk factors associated with involuntary hospitalisation among adults differ from those in children and adolescents?
- Are there any sociodemographic factors which increase (or decrease) the risk of involuntary hospitalisation among children and adolescents, even after accounting for clinical factors?

The thesis is divided into three sections.

1.4.1 Part one: Philosophical, ethical, and historical context

The first section introduces some of the ethical and philosophical issues around the use of involuntary psychiatric treatment among people of all ages and provides an explanation as to why this practice continues to be regularly used worldwide despite the growing international concern about the use of coercive interventions. The second chapter of this section provides some historical context to these issues, with a particular focus on the development of the Mental Health Act 1983, the legislation used to admit and treat people involuntarily in England and Wales. In this chapter I look back to the thirteenth century English origins of modern international mental health law, as well as discussing the 2018 Independent Review of the MHA and the changes that have been proposed in the Draft Mental Health Bill, which was published in June 2022 and will be introduced when parliamentary time allows. The focus on English mental health law will provide important background and context for the third section of the thesis in which I present two studies investigating the use of involuntary hospitalisation among a cohort of children and adolescents in psychiatric inpatient units in South London.

1.4.2 Part two: Literature reviews

In section two I describe two systematic reviews, meta-analyses, and narrative syntheses that I conducted. My initial intention had been to conduct one review which compared patients hospitalised voluntarily and involuntarily across all ages, to understand more about the risk factors for involuntary hospitalisation in childhood, adolescence, and adulthood, and whether

these vary over time. Understanding the risk factors for involuntary hospitalisation among children and adolescents in isolation, without clarity about these factors in adults, seemed likely to limit the potential impact or relevance of the findings and would undoubtably lead potential policy makers to question whether these risk factors change in adulthood. I hoped that clarification of the risk factors for involuntary hospitalisation across the life course might lead to greater understanding about how we can intervene to prevent and reduce coercion in people of all ages. However, it quickly became clear that this would not be possible to do this in a single systematic review. Preliminary searches revealed that there had already been extensive research into the factors associated with involuntary hospitalisation among adults, but the findings (apart from ethnicity) were often contradictory. However, in children and adolescents, there was so little research that it would have been very difficult to effectively combine the data across the age groups. I therefore began with a review of the factors associated with involuntary hospitalisation in adults excluding ethnicity, which was investigated on its own in a companion study. Commencing work on this review corresponded with a call for evidence on the risk factors for involuntary hospitalisation from the Department of Health and Social Care to support the Independent Review of the Mental Health Act. A summary of the findings from my study was published in the final report of the Independent Review of the Mental Health Act. Using the methodology established in the first review I then investigated the factors, including ethnicity, associated with involuntary hospitalisation among children and adolescents.

1.4.3 Part 3: Historical cohort studies

In the third section of the thesis, I investigate the social and clinical factors associated with involuntary hospitalisation among children and adolescents in more detail, as well as looking at whether there are social factors which are associated with involuntary hospitalisation after adjusting for clinical and service factors. I used the Clinical Record Interactive Search (CRIS) database to identify a large cohort of children and adolescents who had been inpatients in South London and the Maudsley NHS Trust (SLaM) over a 13-year period. In chapter six I introduce CRIS and present some of the potential benefits and challenges of using 'big data'. In chapters seven to nine I present the findings from two studies I conducted using CRIS. In the first study, presented in chapter seven, I compare the sociodemographic and clinical differences between all the young people in hospital involuntarily with those who were in

hospital voluntarily. In the second study, presented in chapter eight, I focus only on those young people in the cohort who were living in the SLaM catchment at the time they were admitted to hospital and investigate whether there are any differences in the use of outpatient mental health services and referral pathways between the voluntary and involuntary patients. Chapter nine summarises the findings from this section. In chapter 10, I summarise the findings from the thesis as a whole and review the similarities and differences between the risk factors for involuntary hospitalisation among children and adolescents and adults with reference to existing literature. In this discussion chapter, I also consider further research directions and policy implications of my thesis findings.

Chapter 2. Is involuntary psychiatric treatment a right or a wrong?

2.1 Chapter summary

In this chapter I describe how mental health law represents a tension between autonomy and paternalism, and how a debate about whether involuntary hospitalisation can ever be compatible with human rights standards is currently dividing UN human rights committees. Next, I briefly present the four fundamental principles of medical ethics and how these can come into conflict when considering involuntary hospitalisation. Finally, I review what we know about the outcomes of involuntary hospitalisation internationally in terms of risk prevention, clinical improvements, and patient/carer experiences, as this is important in framing discussions about the place and value of involuntary hospitalisation in modern medical practice.

2.2 Balancing autonomy and paternalism

In his introduction to *On Liberty*, published in 1859, the British philosopher John Stuart Mill writes, "the nature and limits of the power which can be legitimately exercised by society over the individual….has divided mankind, almost from the remotest ages".[63] The complexities and often divisive nature of this tension between autonomy and paternalism have been demonstrated on an unprecedented scale as international governments responded to the Covid-19 pandemic. In March 2020 the WHO urged countries to adopt strict social distancing and quarantine measures: "All countries must strike a fine balance between protecting health, minimising economic and social disruption, and respecting human rights".[64] Many imposed 'lockdowns' in which individual freedoms were restricted in order to prevent the spread of the disease, protect the vulnerable and reduce burden on health services.[65] However, restrictions on the rights and freedoms of people with mental illness have been occurring worldwide outside of global public health emergencies for centuries and mental health laws represent similar tensions between provision of healthcare, public protection and respect for individual liberties.[66] Brenda Hale has described mental health law as a perpetual struggle between three overlapping but often competing goals, "protecting the public, obtaining access to the services people need, and safeguarding users' civil rights."[67]

Whether, and in what circumstances the state, and its agents have the right, or indeed the responsibility, to intervene in the lives of people with mental illness and deprive them of their liberty is a longstanding source of debate. Mill explicitly excludes those with mental illness from his "liberty principle" because they, "are still in a state to require being taken care of by others".[63] This view is reflected in the European Convention on Human Rights (ECHR) Article 5 in which, "persons of unsound mind" are excluded from the universal "right to liberty and security of person".[68] However, the prohibitory stance on involuntary psychiatric intervention in the CRPD (or more precisely, the way in which this has been interpreted by the committee which monitors the implementation of the CRPD) has contributed to debate between those who argue that compulsory psychiatric treatment does not comply with human rights laws and is therefore never justifiable, and those who argue that it could comply with human rights standards provided there are appropriate legal safeguards in place.[23,69–72] This debate has divided the UN human rights committees and has recently been referred to as "the Geneva impasse".[73]

The UN Special Rapporteur on torture and other cruel, inhuman or degrading treatment or punishment explicitly endorses the CRPD as a normative standard for human rights law and wrote in his 2020 report to the UN General assembly that, "involuntary…psychiatric intervention on the grounds of 'medical necessity' or the 'best interests' of the patient…may well amount to torture."[74] He suggests that involuntary psychiatric intervention is a violation of international human rights law and that the CRPD offers a chance to liberate the entire field of mental health from a legacy of, "stigma, hopelessness, and discrimination".[69] While the aims of the CRPD are widely praised for providing, "a vision of equality which is compelling and which must become the international norm",[75] others have suggested that the restrictions it makes on governments' abilities to intervene to protect the rights and interests of disabled people would be hard to translate into real-life scenarios and, "may end up hurting the very people it purports to help".[76] Professor Szmukler, whose research focuses on methods to reduce compulsion in psychiatric care writes that, "It is hard to imagine a society in which it would be seen as right that persons who are seriously incapable of exercising autonomy or expressing their will and preferences would be allowed to act so as to incur grave harms, including death."[71] Professor Sir Simon Wessely expresses a similar view in the introduction to the Independent Review into the Mental Health Act in England and Wales,

which he chaired in 2018: “Few would like to live in a society in which an individual has precious little autonomy. But nor would we like to live in one that does little or nothing to protect its most vulnerable.”[77]

As well as people with mental illness, Mill also explicitly excludes children from the liberty principle, and the lack of attention or discussion that this has generated perhaps, “reflects a wide-spread intuition that Mill is obviously and transparently right about children”.[78] Amy Guttman for example writes that, “it would be absurd to apply a principle of equal freedom to children” and goes on to explain that: “we generally do not consider children – or at least young children – to be rational beings…In fact, since we believe that young children are generally not in a position to give consent, many things we do to them are perfectly acceptable even when they explicitly refuse consent.”[79] However, Godwin, for example, asks why paternalism is justifiable for children but not adults, when neither possess the relevant interest-promoting capacities.[80] She argues that this relies on undervaluing, relative to adults, the potential injuries that a child might experience through coercion (e.g. humiliation) or relatively overvaluing children’s welfare interests. She suggests that using different standards to justify paternalism in children and adults is very difficult to reconcile with respect for the moral relevance of children’s values and with widely shared commitments to equality. This is an area that has received little research attention to date but considering attitudes towards paternalism as applied to children and adolescents, may reveal much about attitudes to paternalism more generally and could offer another way of approaching the current debate about whether involuntary care can ever be justified.

2.3 The ethical justifications and challenges of involuntary psychiatric treatment

The prevention of grave harms and protection of the vulnerable, mentioned by Professors Szmukler and Wessley above, are ethical justifications for the use of involuntary hospitalisation. There are four fundamental principles of medical ethics: healthcare decisions should intend to help (beneficence), do no harm (non-maleficence), promote a patient’s wishes (autonomy) and be applied fairly (justice).[2] The principles of beneficence and non-maleficence reflect a consequentialist stance, which is concerned with the outcome of an action (such as the prevention of ‘grave harms’).[81] Autonomy and justice reflect a deontological stance, which means that they are concerned with the intentions behind an

action (such as the belief that it would be wrong for a society to do little or nothing to protect its vulnerable). With respect to involuntary treatment, it is very challenging for the individual practitioner to comply with all of these moral principles. In terms of deontological theory, a practitioner deciding on the use of involuntary hospitalisation has a duty to respect the rights of both patient and public, which are likely to conflict and there is no guidance on how these duties should be 'ranked'. In the case of children and adolescents, there is usually an additional duty to consider the wishes and views of parents/guardians, which may conflict with those of the child and/or each other. It is also challenging to justify involuntary hospitalisation from a consequentialist stance due to the current lack of strong evidence of beneficial outcomes from involuntary hospitalisation in terms of preventing risk or improving mental health, which I now go on to review.

2.4 Outcomes of involuntary psychiatric treatment

2.4.1 Risk prevention

Mental health laws were historically based on criminal laws designed to contain those with mental illness in order to protect the potentially vulnerable *public* (please see next chapter for more detail). In modern mental health legislation, the focus has mostly shifted from containment to care, and the locus of vulnerability has ostensibly shifted from public to patient, but most countries, including the UK, still include the presence of 'risk to others' as well as 'risk to self' in the criteria for an involuntary psychiatric intervention.[31] Despite evidence that the risks to others posed by people with mental illness (with the exception of comorbid substance misuse) is small,[82] almost half (46%) of all involuntary admissions in Europe are based on the presence of perceived risk to others.[83] However, risk assessment in general mental health services for people of all ages is extremely difficult and despite expectations that risk assessments will be routinely carried out and the potential negative impact of being found to be 'high' risk (e.g. being hospitalised involuntarily), the development of robust tools to accurately measure, predict and subsequently prevent risk have been largely unsuccessful.[84,85] It is, therefore, very difficult to measure the extent to which involuntary hospitalisations reduce risk. In addition, with respect to the ethical principles discussed above, if the processes for assessing risk are flawed, then someone perhaps

incorrectly considered to be 'high risk' would be more likely to lose their liberty (which is harm) and is also treated with less justice than other people (which is a wrong).[86]

2.4.2 Clinical improvements

A 2022 international scoping review of the outcomes and implications of involuntary treatment exposed highly conflicting findings.[87] Some studies found that most involuntary patients showed a clinical improvement overall following treatment. But there were also associations between involuntary inpatient care with increased rates of suicide, increased risk of further coercive practice such as restraint and seclusion (although in many jurisdictions these can only be done if someone is admitted involuntarily), longer lengths of stay, more medication, and a higher rate of hospital readmissions, than those in hospital voluntarily.[87] The authors acknowledge though, that they had not considered the type of psychiatric disorder or the processes leading to involuntary hospitalisation when conducting this scoping review of the literature on outcomes of involuntary hospitalisation. In contrast, a recent Swiss propensity score matched analysis of over 9000 inpatients over 6 years (not included in the review mentioned above) found that both the voluntary and involuntary groups demonstrated significant clinical improvements during hospitalisation, but in the involuntary patients the length of stay was shorter and fewer medications were used. [88] However, deaths, including suicides, were more than 3 times more common in the involuntary group, though this may reflect differences in severity of illness between the two groups.[88] The clinical outcomes of children and young people detained involuntarily compared to those in hospital voluntarily (or under parental consent) are not known. The only study which looks specifically at this in children and young people is from the UK and compares the outcomes of patients admitted to an eating disorders unit involuntarily and voluntarily.[89] The authors found that by discharge, all physical and psychosocial measures had improved and that there was no significant difference between the detained and informal patients, despite the involuntarily admitted patients having more severe symptoms on admission.

2.4.3 Patient and carer experiences

A recent review and meta-aggregation of qualitative studies about coercive care found that many patients viewed involuntary care as a necessary form of protection and care: "They saw that I could take no more. It's like a mother who takes over when you don't have any more in

you. You become a child again; you have a similar emotional register, the feeling that there's nobody out there. It's negligence to do nothing; it would have been a new betrayal for me who had no parents to take care of me. It was, in fact, my first encounter with care. I really felt cared for."[90] Some also felt that it had a positive impact on their mental health by enabling them to rest, recover and gain perspective on their position. However, patients' retrospective views on whether involuntary treatment was justified or beneficial vary greatly and it remains unclear which factors are associated with more positive retrospective judgments.[91] A systematic review and qualitative meta-synthesis of 56 papers on patient experiences of involuntary treatment found that coercive interventions were typically experienced negatively and were described as frightening, distressing, dehumanising and disempowering.[6] The negative impact seemed to be reduced when staff were perceived to form caring and collaborative relationships with patients, and patients had access to clear information.[6] Other studies have identified links between involuntary care and future medication non-adherence and increased sensitivity to subjective or objective coercion in ongoing treatment, as well as long-term avoidance of mental health support, potentially leading to greater need for hospital readmission.[92] A systematic review and meta-synthesis of the experiences of carers of adults hospitalised involuntarily found that the most common feeling expressed was distress, although some carers had conflicting feelings of relief but also guilt that they had not been able to prevent the admission.[7] They also reported concerns about prejudice and stigma, leading to feelings of isolation. Timely and accessible information and supportive relationships with mental health professionals helped to make carers feel more involved and supported.[7]

Although there are a few studies describing children and young people's experiences of inpatient admissions there are none which look explicitly at the different experiences of those who have been admitted or treated involuntarily, compared with those admitted or treated voluntarily.[93–97] There is one study which explores the views of young people aged 13 to 21 years old admitted to an eating disorders unit (as well as some of their parents), all of whom had experienced treatment without their full consent in some form.[98] Although most participants believed that compulsory treatment was justified if (and only if) the patient was at serious risk of death, the participants expressed very strong negative experiences of involuntary treatment and described it as, "imprisonment, punishment, helplessness and

marginalisation."[98] Based on their findings, the authors ask whether, "the very exercise of compulsory treatment however well meant, could be considered degrading and an infringement of human rights and dignity?"[98]

2.5 Conclusion

In this chapter I have presented an overview of the current debate about whether involuntary hospitalisation is a 'right' that a just society should be obliged to offer its vulnerable, albeit with appropriate safeguards in place, or a 'wrong' which is not compatible with human rights standards and is never justifiable. I have considered some of the philosophical and ethical issues associated with the use of involuntary hospitalisation as well as reflecting on how less demanding criteria are used to justify paternalism towards children than adults, regardless of their relevant interest promoting capacities. I have included a review of what we know about the outcomes of involuntary hospitalisation among children, adolescents and adults.

This is important context for the rest of the thesis as it helps to frame the discussion about why it is so important for us to understand the ways in which involuntary hospitalisation is being used and crucially, who it is being used on/for. In the next chapter I add further context by providing a brief history of mental health legislation in England and Wales, as well as considering some of the potential legislative changes which have recently been proposed and specifically how these may impact children and adolescents.

Chapter 3. Mental health legislation in the United Kingdom

The contents of this chapter have contributed to:

1. ***A publication in the Association for Child and Adolescent Mental Health (ACAMH) magazine***
   Walker, S., Dubicka, B. and Kingsley, D. The Mental Health Act White Paper: potential implications for children and young people. *The Bridge*, 2021 New Issue 1, Policy reviews. https://www.acamh.org/app/uploads/2021/10/pr-bridge-mental-health-white-paper-child-implications.pdf

2. **A briefing for the Parliamentary Office of Science and Technology (POST)**
   Walker, S and Hobbs, A. *Mental Health Act Reform - Children and Young People*, POSTnote 685, November 2022.
   https://researchbriefings.files.parliament.uk/documents/POST-PN-0685/POST-PN-0685.pdf

3.1 Chapter summary

In this chapter I present a brief overview of the development of mental health law in the UK and the current mental health legislation, the MHA 1983, which was amended in 2007. I then go on to present some of the specific complexities of mental health legislation when applied to children and adolescents. Finally, I discuss some of the proposed changes to the MHA 1983 in relation to adults as well as children and adolescents. I end with a very brief comment on the recent proposed changes to mental health law in Scotland and Northern Ireland.

3.2 History of mental health legislation in the UK

Modern mental health law is thought to have originated in English statutes from the 13th century. These laws allowed the sovereign (Edward I) to intervene to protect the private property of those of 'unsound mind' on the legal basis of *parens patriae* (father of the country).[99] The physical detention of people with mental health problems was first regulated in British law in the 18th Century. The 1713 and the 1744 Vagrancy Acts enabled two or more 'Justices of the Peace' to apprehend the "furiously mad and dangerous" so that they could be "safely locked up in some secure place," and if needed "be there chained", for as long as the "lunacy or madness shall continue".[100] These secure places included jails, workhouses and private asylums, and the emphasis was on containment of the mentally ill for the protection of society, rather than the protection of those with mental illness.

By the end of the 18th century, concern had started to shift to those who were being detained. Reports of malpractice within private asylums and a growing public concern about wrongful confinement, led to the Act for Regulating Private Madhouses in 1774.[101] This Act introduced the need for a medical certificate for detention, although this was not needed for the pauper patients. The Madhouse Act of 1828 brought in the need for "two medical men" to certify an involuntary admission to a private asylum, but for pauper patients just one medical certificate was needed.[102] The Lunatics Act in 1845, introduced a more detailed certification process to try to safeguard further against the wrongful detention of patients. Again, the requirements for the private and pauper patients differed, with reasons for detention only necessary on the certificates for the private patients.[102] Children and adolescents were historically treated exactly like adult patients and were admitted to asylums along with adults.[103] Specialist inpatient units for those under 18 were only established in the UK in the mid-20th century.[104]

At the beginning of the 20th Century, the 1913 Mental Deficiency Act was introduced "to make further and better provision for the care of Feeble-Minded and other mentally defective persons".[105] Despite the use of language that would not be acceptable today, this demonstrates a clear change in focus away from protection of society, towards the care and treatment of those with mental illness. At that time, two medical certificates were required for everyone, and the duration of detention was limited to one year. Shortly after the NHS was established, The Mental Health Act 1959 was introduced. The main principles of this were to encourage voluntary care, ideally in the community, and to ensure that where compulsion was necessary, it was done within strict legal and medical frameworks. It also established mental health review tribunals where patients could challenge their detention.[106] The current Mental Health Act was introduced in 1983 and amended in 2007. The key changes brought by the 1983 Act were a reduction in the length of treatment orders and an increase in the opportunities for patients to apply to a tribunal, as well as giving detained patients voting rights and entitlement to aftercare services.[107] However, one of the main changes in the 2007 amendment was the addition of Community Treatment Orders (CTO), which enable certain patients to be recalled to hospital under the Mental Health Act from the community. The introduction of CTOs was partially driven by high profile cases of ex-patients committing crimes and a growing public concern that community treatment was failing, and as such

represents, for the first time in the history of the MHA, a shift in focus away from care of the patient, back towards the protection of public safety.[108]

The main criteria for an involuntary hospitalisation under the MHA 1983 are a) the presence of a mental disorder, broadly defined as "any disorder of the mind or brain," with the specific exclusion of learning difficulties and substance misuse, and b) that detention is necessary for the patient's own health or safety or for the protection of others. These criteria are similar to the criteria for involuntary hospitalisation used in mental health legislation internationally. The presence of a mental disorder is the primary criterion for involuntary hospitalisation in all jurisdictions, though definitions of this vary.[109] In some places, for example in Finland, a diagnosis of a psychotic illness is needed in order to be hospitalised involuntarily. In other places, such as Canada, a mental disorder is defined much more broadly as, "any disorder or disability of the mind", with no specific diagnostic exclusions.[110] Most mental health law also includes a requirement that the person with the mental disorder is presenting with risk, either to their own health or safety, or to the health or safety of others.[31] In Europe there are only three countries which do not include risk in their mental health legislation: Italy, Spain and Sweden. Other legal criteria which must be met for involuntary hospitalisation internationally include a need for treatment, lack of capacity, lack of insight and treatment refusal.[83,111]

The criteria for involuntary detention in the MHA 1983 apply to people of all ages. A 2002 European Union funded report comparing mental health legislation across Europe identified only four countries which have separate regulations for placing children and adolescents involuntarily: Austria, Germany, Finland, and Portugal. A fifth country, The Netherlands, has different procedures for minors below 12 years.[31] The authors comment that given the different mental health conditions experienced by minors compared to adults, the need to consider education, parental views, and specialist staff and facilities, "it seems remarkable that only few Member States provide separate regulations for placing children and adolescents involuntarily." [31] More recent investigations into the differences in mental health legislation across Europe have not included any comment on the specific regulations for children and adolescents.[83] I will now consider the use of mental health legislation in the UK with specific focus on children and adolescents.

3.3 Children and adolescents and UK mental health law

Traditionally, it was assumed that children and adolescents were unable to give or withhold valid consent and were usually admitted to hospital and treated using the consent of their parents.[98] Legal precedent and social changes in attitudes to children's rights and responsibilities have all contributed to change this and the wishes and views of children are increasingly sought and respected.[112,113] As such, reliance on parental consent has become increasingly problematic, which has likely contributed to an increase in the use of mental health legislation to authorise admission and treatment in children and adolescents, although there is very little data or research to clarify this.[112] The involuntary hospitalisation of people under 18, therefore, remains an area which is renowned for its clinical, ethical and legal complexity because it involves areas of uncertainty like the limits of decision-making powers between parents and their children, as well as engaging, "a raft of legislation, case-law, regulations, codes of practice and policy guidance across the differing fields of law: mental health, mental capacity, community care, family and children's rights".[113] Although the MHA 1983 has no age cut offs, the involuntary treatment of children and adolescents overlaps with other legislation which does have minimum and maximum age limits. Specifically, UK law makes a distinction between the decision-making ability of those aged over and under 16. The Mental Capacity Act (MCA) 2005 applies to those aged 16 or over and, unlike the MHA, it applies to both physical and mental health interventions. Under the MCA, anyone aged 16 or over is presumed to have mental capacity to make decisions about their own care, unless it is established that they do not (ie. They have an impairment of mind or brain, and are unable to understand, retain and weigh in the balance the information needed to make a decision and then communicate their decision). However, those aged under 16 are presumed to be *unable* to make decisions for themselves, unless it is established that they are 'Gillick competent' to make the decision in question. This is based on the House of Lords decision in Gillick v West Norfolk (1989) which held that a child aged under 16 can consent to medical treatment if they are deemed by professionals to have the maturity and intelligence to understand what is involved.[114]

Another important piece of overlapping legislation with specific age boundaries is the Children Act 1989, which is concerned with ensuring the welfare of children up to the age of 18.[42] It defines parental responsibility as "all the rights, duties, powers, responsibilities and

authority which by law a parent of a child has in relation to the child and his property". This ends when the child reaches the age of 18, but prior to this, those with parental responsibility can, in certain circumstances, consent to treatment on behalf of their child. In order for those with parental responsibility to make decisions on behalf of their child, the decision has to be "a decision that a parent should reasonably be expected to make".[115] The parameters of this have not yet been tested in court.[116] In current practice, unless a person aged 16 or 17 consents to their admission for inpatient psychiatric care, the MHA will likely be needed to authorise their admission to hospital or treatment.[113] In addition, the MHA Code of Practice, which was updated in 2015, advises against relying on parental consent to overrule a Gillick competent child's refusal of hospital admission or treatment.[115] In practice this means that:

- All people aged under 18 can be admitted and treated in hospital under the MHA
- In addition, young people aged 16 or 17 can be admitted/treated under their own consent, if they have capacity to make this decision
- Children aged under 16 who are Gillick competent to make the decision, can be admitted to hospital and treated under their own consent
- Children aged under 16 who are not Gillick competent to make the decision can be admitted under parental consent, as long as the decision falls within the proper exercise of parental responsibility.

This can lead to a situation where the MHA is not needed to admit or treat someone who has not consented to their psychiatric admission or treatment. Despite the fact that these children have not consented to their admission, they would be described as being in hospital 'voluntarily' because they are not held under the MHA. Data on the children admitted and treated under parental consent is not currently centrally collected and as such, it is not possible to know how often parental consent is being used in England and Wales and for whom.

3.4 Changes to the mental health legislation in the UK

In May 2017, Prime Minister Theresa May announced her plan, "to rip up the 1983 Act and introduce in its place a new law which finally confronts the discrimination and unnecessary detention which takes place too often."[117] She commissioned an Independent Review of the MHA, chaired by Professor Sir Simon Wessely, which was published in December 2018.[77] This

review was wide-ranging and widely praised and involved multiple stakeholder meetings and consultations, as well as specially commissioned research. The study presented in the following chapter contributed to the evidence for this review. The independent review made 154 recommendations for modernising the Mental Health Act and proposed that a new Act should be human rights-based and enshrine the concepts of choice and autonomy, least restriction, therapeutic benefit and recognise the person as an individual. Its recommendations were taken forward in the Reforming the MHA White Paper, which was put out to public consultation in January 2021 and received over 1,700 responses.[118] The Government's draft Mental Health Bill, which is intended to give effect to these legal and policy approaches, was published in June 2022.[119] The reforms aim to reduce assessment and detention under the MHA and give patients who are detained more autonomy and choice in decisions about their care. A Joint Select Committee on the Draft Mental Health Bill was established in July 2022 to scrutinise the draft Bill, and their report was published in January 2023 after considering oral and written evidence from multiple stakeholders.[120] Based on the work I have done in this field, I was invited to contribute to one of the select committee oral evidence sessions focusing on children and young people in November 2022.

The Independent Review of the MHA includes a short section on children and young people, and reports that, "there were a range of strongly contrasting views" on this topic. This was particularly around whether parents should be able to consent to the admission or treatment of a child under 16 who is objecting to this, and whether it makes a difference if the child is deemed to be Gillick competent to make the decision or not. The review recommends that the government consult widely on this issue.[77] In the MHA White Paper, the government states that it wants "to strengthen the rights of children and young people" but acknowledges that there are "complexities involved with balancing their rights and ability to make decisions with the rights of their parents or carers, particularly for children under 16."[118] While acknowledging that these are important issues, the White paper goes on to state that, "These matters are ultimately for the Code of Practice, rather than the act itself and will form a particular focus for consultation when we come to review the Code." With respect to the specific issue of decisions around the admission and treatment of those under 16 and the role of parents it states that, "The government is not minded to consult on this complex matter, which it believes is best left to the courts".[118] Interestingly, however, in a judgment published

just a few days after the publication of the MHA White Paper regarding the case of a 15-year-old girl with sickle cell syndrome wishing to refuse blood transfusions because of her religious beliefs, Sir James Munby, the High Court judge, held that a Gillick competent minor's refusal to consent to medical treatment is not determinative. He acknowledged that, "times have changed and views as to the proper balance between medical paternalism and patient autonomy have altered" but went on to say that the decision about whether children aged under 16 should be able to make fully autonomous decisions about their healthcare is, "a matter for Parliament, not the courts."[121]

The decision-making ability of children, young people and their parents is clearly therefore a complex and evolving issue and there is currently a lack of guidance from either government or the courts for clinicians on how this should be approached, especially in the case of disagreements. The Draft Mental Health Bill does not mention children and adolescents specifically at all although this is addressed by the Joint Committee on the Draft Mental Health Bill who wrote in the introduction to their report published in January 2023 that, "The upcoming legislation will be a crucial opportunity for the Government to strengthen the rights and protections for children and young people under the MHA".[120] It recommends that there should be a consultation on the introduction of a statutory test for competency for children under 16 to replace Gillick competence, as well as the need to strengthen safeguards in the MHA itself which will help to prevent children and young people being placed in inappropriate settings, such as adult wards. The government are now considering the recommendations from this report and will introduce the new bill when parliamentary time allows.

3.5 Brief comment on changes to mental health legislation in Scotland and Northern Ireland

As healthcare in the UK is devolved, the changes to the MHA will only apply to England and Wales. Meanwhile, Scotland and Northern Ireland are in the process of introducing reforms to their own mental health laws. In Scotland the main mental health legislation is the Mental Health (Care and Treatment) (Scotland) Act 2003, amended by the Mental Health (Scotland) Act 2015.[122] Proposals to change the mental health law in Scotland were open to public consultation between March and May 2022, and the final report was presented to the Scottish Government for consideration in September 2022. The Northern Ireland Government are also in the process of implementing a new Mental Capacity Act (NI) 2016, which will bring

together mental capacity and mental health into one 'fusion' law.[123] When this is in place it will replace the Mental Health (NI) Order 1986 for anyone over 16 and will mean that if someone has capacity to make decisions about their care, even if they have a mental disorder, they will not be detainable under mental health law.[124–126] This is likely to bring in further complications for the psychiatric management of those under 16. It also raises questions about the appropriate management of those aged 16-17, who if thought to have capacity could not be treated against their will, which is an area of ongoing discussion and beyond the scope of this thesis to consider.

3.6 Conclusion

The historical background demonstrates how the purpose and objectives of mental health law have shifted overtime, which can reveal much about societal attitudes towards mental illness as well as providing context for the current debates about the use of involuntary treatment. Child and adolescent mental health law in the UK is a complex area, involving overlapping legislation, case law and policy. In addition, there remains a huge amount of uncertainty over whether children should have the right to consent to their psychiatric care and the extent to which parents can support with this. Proposed changes to UK mental health law aim to reduce the use of compulsory treatment but children and adolescents have, so far, largely been excluded from the draft Mental Health Bill. It is also unclear if and when these changes will be introduced, and whether legislative changes themselves can really make a difference to psychiatric practice and the treatment of people with mental health difficulties, in the absence of other changes such as the expansion of community services and increased investment into mental health care.

I will now move on to Section 2 of the thesis in which I present the international systematic reviews and meta-analyses I have completed on the socio-demographic and clinical factors associated with involuntary hospitalisation. The first review focuses on the social and clinical factors associated with involuntary hospitalisation among adults, and the second review examines which of these factors, and/or others, are associated with involuntary hospitalisation in children and adolescents.

Chapter 4: Clinical and sociodemographic factors associated with involuntary psychiatric hospitalisation among adults: A systematic review, meta-analysis and narrative synthesis

The contents of this chapter have contributed to the following outputs:

1. ***Evidence for the Independent Mental Health Act Review***

Department of Health and Social Care, Modernising the Mental Health Act – final report from the independent review, 6 December 2018, Annex C, p.248-251. https://www.gov.uk/government/publications/modernising-the-mental-health-act-final-report-from-the-independent-review

2. ***Publication in a peer reviewed journal***

Walker S, Mackay E, Barnett P, Sheridan Rains L, Leverton M, Dalton-Locke C, Trevillion K, Lloyd-Evans B, Johnson S. Clinical and social factors associated with increased risk for involuntary psychiatric hospitalisation: a systematic review, meta-analysis, and narrative synthesis. *The Lancet Psychiatry*. 2019 Dec; 6(12): 1039-1053.

4.1 Chapter summary

This chapter presents the systematic review, meta-analysis, and narrative synthesis I have conducted to clarify the factors associated with involuntary hospitalisation among adults.

I searched MEDLINE, PsycINFO, EMBASE and Cochrane databases for studies investigating the social and clinical factors associated with involuntary hospitalisation on an individual and population-level. I synthesised results using random effects meta-analysis and narrative synthesis.

Seventy-seven studies were included, originating from 22 countries. On meta-analysis, previous involuntary hospitalisation (Odds ratio (OR) 2.17, 95% confidence interval (CI): 1.62 – 2.91; p<0.0001) and a diagnosis of a psychotic disorder (OR 2.18, 95% CI: 1.95 – 2.44; p<0.001) were the factors associated with the greatest odds of involuntary hospitalisation. Other associated factors include male gender (OR 1.23, 95% CI: 1.14 – 1.32; p<0.0001), single marital status (OR 1.47, 95% CI: 1.18 – 1.83; p<0.0001), unemployment (OR 1.43, 95% CI 1.07-1.90; p<0.020), receiving welfare benefits (OR 1.71, 95% CI: 1.28 – 2.27; p<0.0001), and having a diagnosis of bipolar affective disorder (OR 1.48, 95% 1.24-1.76; p<0.001). Using narrative

synthesis, I found associations between involuntary psychiatric hospitalisation and perceived risk to others; positive symptoms of psychosis; reduced insight into illness, reduced adherence to treatment before hospitalisation and police involvement in admission. On a population level there was some evidence of a positive "dose-response" relationship between levels of area deprivation and rates of involuntary hospitalisation.

4.2 Introduction

There are wide variations in the use of compulsory psychiatric hospitalisation between countries, regions, and population subgroups. A 2019 comparative study of the use of involuntary hospitalisation across Europe found that the rate of involuntary hospitalisations ranged from 282 per 100,000 individuals in the country with the highest rate (Austria) and 14.5 per 100,000 in the country with the lowest rate (Italy).[14] The authors investigate legal, political, clinical and economical differences between the countries and conclude that the international differences in rates of involuntary hospitalisation were largely unexplained. Similarly, there can be wide geographical variation in the rates of involuntary hospitalisation within different areas of the same country. In Norway for example, when hospital catchment areas were ranked based on average rate of involuntary hospitalisations, the area with the highest rate had 5.6 times more involuntary hospitalisations than the area with the lowest rate.[127]

There is also consistent evidence from the UK and internationally that adults from minority ethnic groups are more likely to experience an involuntary hospitalisation than those from majority groups. A companion study to this one, which was also commissioned by the DHSC for the MHA independent review and only included people aged over 18, found that compared with people from white ethnic groups, people from black Caribbean (OR 2.53, 95% CI 2.03–3.16), black African (OR 2.27, 95% CI 1.62–3.19), and south Asian (OR 1.33, 95% CI 1.07–1.65) ethnic groups were all at increased risk of involuntary hospitalisation.[11] Moreover, people from migrant groups were significantly more likely to be detained when compared with native groups (OR 1.50, 95% CI 1.21–1.87). They also found that almost half (48%) of the 71 papers included in the systematic review offered no explanation for the variation in risk of detention among minority groups or offered explanations (such as cultural health beliefs, or greater community stigma around mental illness) which were unsupported by primary evidence.

In this review I sought to clarify which clinical and sociodemographic factors (apart from ethnicity) might be associated with involuntary rather than voluntary hospitalisation in adults. Individual level factors such as male gender,[29–31,33] a diagnosis of psychosis,[29–32] and the presence of aggressive behaviour,[31,34,35] alongside service and area-level factors such as lack of availability of alternative outpatient services,[36] increased deprivation[3,37] or differences in legislation[14] have previously been proposed but findings have not been consistent. Greater understanding of the factors driving involuntary hospitalisation may help to clarify the variations in use of compulsory psychiatric care between population subgroups, as well as between regions and countries, which to date remain largely unexplained. It could also inform the interventions that are needed and where they should be targeted to help prevent or reduce the use of involuntary hospitalisation. In addition, I wanted to develop the methodology and findings from this study to inform future investigations into the factors associated with involuntary hospitalisation among children and adolescents as this is an area where the literature is extremely limited.

To my knowledge, there has been no previous international systematic review or meta-analysis which investigates all the sociodemographic, clinical, and service-level factors which may be associated with involuntary care. The aim was to clarify which factors (with the exception of ethnicity) might increase the risk of involuntary hospitalisation in the adult population, and to provide some estimate of these associations.

4.3 Methods

This review was prospectively registered on PROSPERO and can be accessed at https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42018095103. I followed Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines.[128]

4.3.1 *Eligibility criteria*

The primary outcome of interest was involuntary psychiatric hospitalisation, and the exposures of interest were the clinical and social factors which might increase or decrease the risk of this occurring on an individual or population-level. Therefore, studies were included that either:

a) Compared the sociodemographic, clinical, and service-use characteristics of inpatients in hospital involuntarily with those in hospital voluntarily, or
b) Compared the use of involuntary hospitalisation in different geographic regions and investigated the sociodemographic, clinical, or service-level factors associated with involuntary hospitalisation on a population level.

Studies were only included where the mean age of the study sample was 18 or over as the aim of this review was to focus on the factors associated with involuntary hospitalisation in the adult population. My review of these factors in the child and adolescent population is presented in the following chapter. As ethnicity was not a factor under investigation in this review, studies reporting solely on differences in risk of involuntary hospitalisation in minority and majority ethnic groups were excluded, and ethnicity data within the studies I identified for inclusion were not included in the analysis. Studies which included the use of mental health legislation in relation to patients who had committed crimes (forensic patients) were excluded as this a very different population with different risk factors and treatment pathways.

All quantitative study designs were considered, both prospective and retrospective, which had been published in peer-reviewed journals. I did not assess grey literature sources, books, chapters, theses, dissertations, or conference proceedings due to time pressure and the need to inform the MHA review.

I did not restrict the search by language to maximise the number of relevant studies captured. In order to maximise the clinical and policy relevance of the findings, I excluded studies published prior to January 1983, the date the current MHA came into use in England and Wales.

4.3.2 Information sources

I searched the following electronic databases:

- MEDLINE
- PsycINFO (via Ovid)
- Embase (via Ovid)
- Cochrane Controlled Clinical Register of Trials

I supplemented the search strategy by searching the reference lists of included studies and all relevant reviews (backwards citation searching) and papers which reference them (forward citation searching). Forwards and backwards citation searches were carried out using SCOPUS.

4.3.3 *Search strategy*

Electronic database searching was conducted using a combination of keyword and subject heading searches. I initially conducted database searches from inception to 21 May 2018 and updated the search on 14th August 2019.

Search terms were adapted for each database but were broadly grouped to two categories:

1. Mental health and involuntary hospitalisation
2. Potential risk factors for involuntary hospitalisation such as diagnosis, gender, risk, and socioeconomic status

I developed the search strategy in consultation with an information scientist with experience in mental health research. The full search strategy for PsychINFO is presented in Table 4.1. The search strategies for all other databases are in Appendix A.

Table 4.1: Full search strategy for PsycINFO

#	**Search terms with results**
1	"Commitment (Psychiatric)"/ (1597)
2	Involuntary Treatment/ (1200)
3	((psychiatr* or mental* or psychos* or schizo*) adj3 commit*).ti,ab,id. (2001)
4	((mental health adj (act? or jurisdiction or law? or legal* or legislat*)) and (admission* or admitt* or readmi* or re-admi* or hospitali* or in-patients or inpatients or commit* or detain* or detention* or section* or treat* or care)).ti,ab,id. (1554)
5	((compulsory or forced or involunt* or in-volunt* or mandat*) adj3 (admission* or admitt* or readmi* or re-admi* or hospitali* or in-patients or inpatients or commit* or detain* or detention* or section* or treat* or care)).ti,id. (2061)
6	((commitment or restriction or court) adj2 order?).ti,ab,id. (550)
7	legal detention/ (680)
8	or/1-7 (7106)
9	(characteristic* or correlat* or determinant* or factor* or predict* or relationship* or risk* or reason? or role? or susceptib* or trajector*).ti,id. (799493)
10	(1 or 2) and 9 (455)
11	Risk Factor/ (70525)
12	At Risk Populations/ (35694)
13	Predisposition/ (3523)
14	*Age Differences/ (53680)

15	exp *Sociocultural Factors/ or exp *Psychosocial Factors/ or exp *Socioeconomic Status/ (137964)
16	*Demographic Characteristics/ or exp *Sociocultural Factors/ (104023)
17	*Social Issues/ or exp *Homeless/ or *Poverty/ or exp *Social Discrimination/ or exp *Social Integration/ or *Unemployment/ (36516)
18	exp *Violence/ or *Antisocial Behavior/ (66253)
19	*Aggressive Behavior/ or *Conflict/ (33644)
20	*"Racial and Ethnic Differences"/ or exp *"Racial and Ethnic Groups"/ (96536)
21	*Religious Beliefs/ or *Religiosity/ or exp *Religious Affiliation/ or *Religion/ or *Religious Conversion/ (37095)
22	*Marriage/ or *"Marriage and Family Measures"/ or *Family Relations/ or *Family Structure/ or *Home Environment/ or *Marital Relations/ (49617)
23	Disadvantaged/ or Cultural Deprivation/ or exp Social Deprivation/ (15181)
24	*Intellectual Development Disorder/ or *Developmental Disabilities/ or *Cognitive Impairment/ or *Cognitive Ability/ (98389)
25	Social Environments/ or Poverty Areas/ or *Rural Environments/ or *Suburban Environments/ or *Urban Environments/ (29368)
26	*Client Characteristics/ (12356)
27	*Human Sex Differences/ (78319)
28	*Regional Differences/ (2023)
29	*Protective Factors/ (2824)
30	((characteristic* or correlat* or determinant* or factor* or predict* or relationship* or risk* or susceptib* or trajector*) adj3 (age? or gender* or ethnic* or family or social* or religion or religious or psychosocial* or socioeconomic* or socio-economic* or poverty or impover* or depriv* or disadvantaged or employment or unemploy* or homeless* or housing or urban* or suburban* or rural* or demograph* or agressi* or violen* or criminal*)).ti,ab,id. (231745)
31	or/11-30 (867447)
32	8 and 31 (1577)
33	((characteristic* or correlat* or determinant* or factor* or predict* or relationship* or risk* or reason? or role? or susceptib* or trajector*) adj5 (compulsory or forced or involunt* or in-volunt* or mandat*) adj5 (admission* or admitt* or readmi* or re-admi* or hospitali* or in-patients or inpatients or commit* or detain* or detention* or section* or treat* or care)).ti,ab,id. (440)
34	10 or 32 or 33 (2075)
35	(1983* or 1984* or 1985* or 1986* or 1987* or 1988* or 1989* or 199* or 20*).yr,an. (3782724)
36	34 and 35 (1954)

*Note: adj denotes searching for adjacent terms, exp denotes exploding a subject heading, ti denotes searching for a key word in the title, ab denotes searching for a key word in the abstract and id denotes searching for a key word in the article identifier, * denotes truncation.*

4.3.4 *Selection process*

Endnote was used to manage the citations and remove duplicates, while Microsoft Excel was used to track the data screening and extraction. Identification of studies that met inclusion criteria was conducted through a systematic screening of all titles, then abstracts, then full texts. I completed the data extraction with the support of three colleagues who independently screened studies for inclusion. Agreement was ensured by a random 10% check at each stage of the extraction process.

4.3.5 *Data Extraction*

The data was extracted using an excel-based broad extraction sheet, which included study design, sample size, country, diagnosis, age, gender, marital status, living status, socioeconomic status, educational level, length of stay, pathways to care and the primary outcome measures and their associated statistical data. These factors had been identified *a priori* through expert consensus and preliminary reviews of the literature, but I also extracted data on any factors associated with involuntary hospitalisation that were identified in the studies but had not been considered prior to the study commencing.

4.3.6 *Quality Assessment*

The quality of the included studies was assessed using the Standard Quality Assessment Criteria for Quantitative studies, developed by Kmet and colleagues.[129] This is a 14-item checklist which assesses the methodological quality of articles and measures: clarity of the aim and design, sample size calculation, the robustness of outcome measures, analytic methods including some estimates of variance, the sufficiency of reported results, and relevant conclusions supported by the results. Three items refer specifically to randomised trials and were therefore removed from the checklist for this study. Each item was given a score of 2, 1 or 0 representing criteria fully met, partially met, and not met respectively. Therefore, the highest possible score that a study could achieve was 22. A linear summary score (total sum divided by total possible sum) from 0 to 100 was calculated and each study was then categorised as either a low (≤ 49), moderate (50-74) or high (≥75) quality study.[11] Quality assessment was carried out by me and three colleagues. We checked our agreement with random 10% checks and any discrepancies were resolved by consensus.

4.3.7 *Data Analysis*

I used the metafor package in the statistical programme R to calculate random effect summary estimates, odds ratios, and 95% confidence intervals.[130] This is a flexible package which enables the calculation of various effect sizes and outcome measures as well as enabling post-hoc meta-regressions and the creation of forest plots and funnel plots. Also, the R code used to conduct the meta-analysis can be shared and reviewed by others, which facilitates transparency and the reproduction of analysis.

Only seven variables were reported consistently enough to be suitable for including in a meta-analysis: gender, diagnosis, employment, housing status, relationship status, previous involuntary hospitalisation, and previous psychiatric hospitalisation. $P<0.05$ was considered to indicate a significant difference. Odds ratios were used because most of the studies identified in the search either contained appropriate data (the number of events and sample sizes) which meant that these could be calculated or gave ORs where raw data was not provided. I included only unadjusted data in the meta-analyses. I calculated heterogeneity between studies using I^2. A value of 0% indicates no observed heterogeneity, 25% low heterogeneity, 50% moderate heterogeneity, and 75% high heterogeneity.[21] To examine possible causes of heterogeneity, post-hoc meta-regressions were conducted. Possible predictors of the effect of the variables on compulsory hospitalisation examined were mean age of the study sample, percentage of females in each study, and publication year. Mean age was chosen due to the differential risk of psychoses and other severe mental illnesses across the life course, percent females was chosen as a crude measure of gendered associations with risk, and publication year was chosen to determine whether there were changes in the literature over time. These were reported when there were six or more studies for each variable, but in line with The Cochrane Handbook guidance, results were only recorded as significant if there were ten or more included studies.[22] I also conducted sensitivity analyses, including only the studies rated as high quality for the primary outcome of involuntary hospitalisation.

The narrative synthesis was carried out following guidance on the conduct of narrative synthesis for systematic reviews.[23] Using the data from the broad extraction sheet, I identified factors that were reported inconsistently (e.g. risk to self, which was reported in a variety of ways including self-harm, suicidal ideation, suicidal intent and suicidal acts) or infrequently, and were more suitable for a narrative analysis rather than a meta-analytic approach. These included psychiatric symptoms, insight, treatment adherence, risk to self and others, pathways to care, social support, alternative community treatment and area-level variation. In order to develop a preliminary synthesis of these factors, the data was tabulated by study, and included a textual description of the identified factors, whether the direction of the association with involuntary hospitalisation was positive or negative, and if this was statistically significant. I also recorded any given hypotheses as to the reasons behind these

associations, as well as the quality rating of the study. The data was then re-grouped by factor of interest, rather than by study in order to explore how each factor was associated with involuntary care across all of the studies.

The validity of meta-analyses, like mine, which include only published studies can be impacted by publication bias – the phenomenon where studies with statistical significance are more likely to be published than those with non-significant findings.[131] Funnel plots, which are scatter plots of effect estimates from individual studies against a measure of each study's size or precision, are one of the most common methods proposed to detect publication bias.[132] Funnel plot asymmetry can be associated with publication bias and was used to assess for bias in this study, but the presence of asymmetry has a number of potential other causes (such as poor methodological quality, artifact or even chance) which should be considered when using funnel plots.[133]

4.4 Results

4.4.1 Study characteristics

The search identified 6231 studies in total and the repeat search identified a further 497 studies. In total, 195 full text articles were screened. Of these, 69 studies met inclusion criteria and a further eight studies were identified after reference and citation searches. In total, 77 studies were included in the review. Please see the PRISMA Flow chart of study selection in Figure 4.1.

The studies were from 18 high-income countries: 13 European countries, USA, Canada, Australia, Israel, and Taiwan; and four middle-income countries: China, Brazil, Turkey, and India. The total number of psychiatric inpatients represented in the study is 975,004 of which 228,239 (23%) had been involuntarily hospitalised. Most studies were retrospective cohort studies using hospital or national databases as data sources. Three studies used population samples, rather than comparing voluntary and involuntary inpatients,[3,9,37] and two compared rates of compulsory care across different services.[134,135]

Visual examination of the funnel plots found no evidence of publication bias. The funnel plots for gender, diagnosis and employment are presented in figures 4.2 to 4.4 below. The other funnel plots are included in Appendix A.

The key characteristics of the included studies are presented in Table 4.2.

Figure 4.1: PRISMA Flow chart of study selection

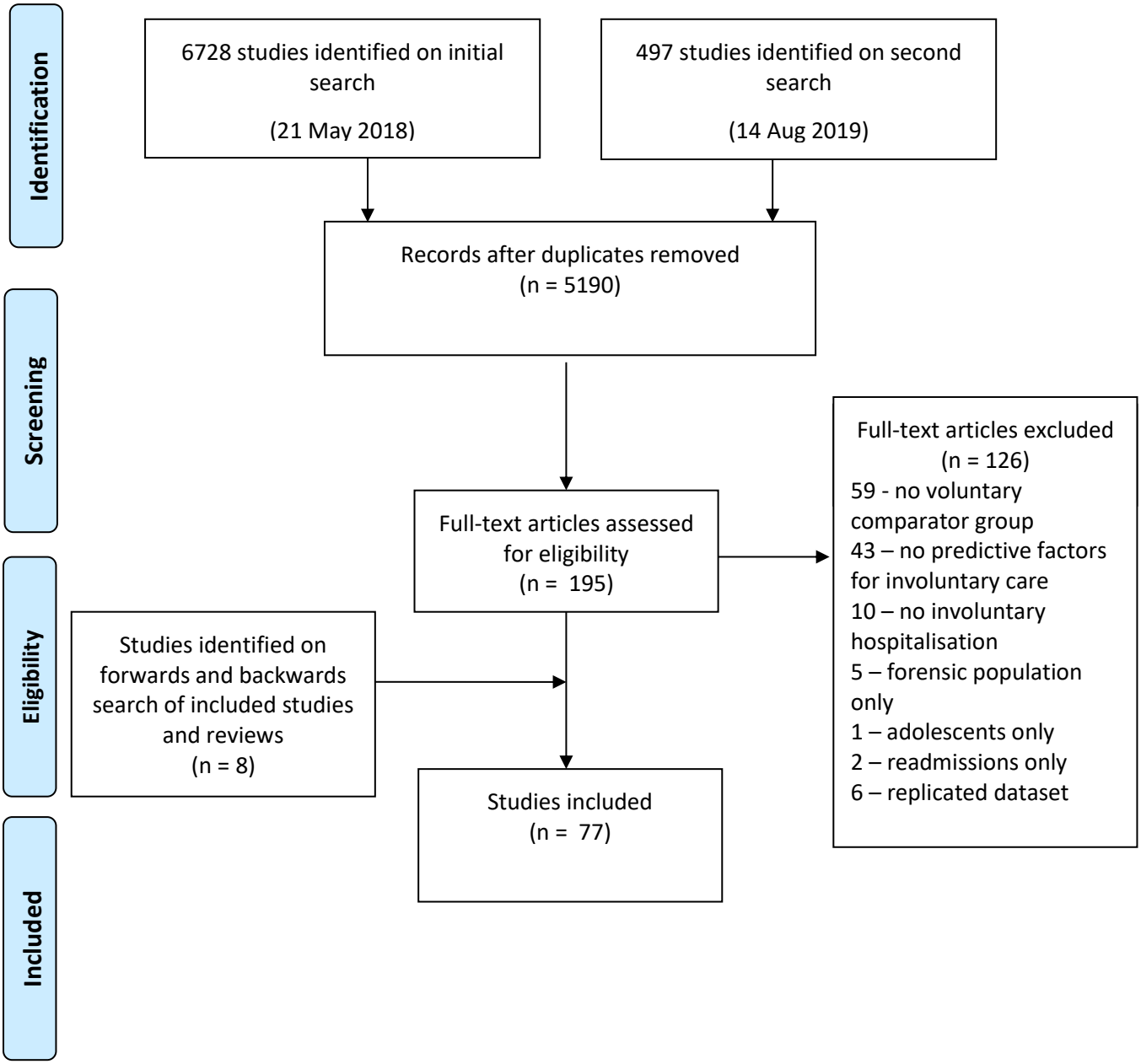


Table 4.2: Characteristics of included studies

Author	Study type	Country	Sample size	Sample description	Number of involuntary admissions (% of all inpatients)	Social and clinical correlates included in analysis	Quality Low (L) Moderate (M) High (H)
Aguglia 2016[136]	Cohort	Italy	730	Consecutive admissions to the Psychiatric Inpatient Unit of the San Luigi Gonzaga Hospital, Orbassano from Sept 2013 to Aug 2015	112 (15.3)	Age, Gender, Education level, Marital status, Suicide ideation/attempts, Diagnosis	M
Balducci 2017[137]	Cohort	Italy	848	Consecutive admissions to the Psychiatric Inpatient Unit of the General Teaching Hospital of Santa Maria della Misericordia, Perugia from June 2011 to June 2014	309 (36.4)	Age, Gender, Marital Status, Diagnosis, Taking medication at the time of admission, More than one hospitalisation	H
Bauer 2007[138]	Cohort	Israel	34799	National Psychiatric Case Registry of the Ministry of Health was used to identify all adult inpatient psychiatric hospitalizations between 1991 and 2000	11156 (32.1)	Gender, Diagnosis, Marital Status, Years of education	H
Beck 1984[139]	Cohort	USA	300	Random sample of voluntary and involuntary admissions to three adult inpatient units in Missouri over three time periods (Jan to June 1978, 1979 and 1980)	150 (50)	Employment status, diagnosis	L
Bindman 2002[37]	Ecological	England	Approx. 1.71 million	Purposive sample of 8 mental health provider Trusts in England in 1998 to 1999	1507 (voluntary admissions not recorded)	Number of inpatient beds, Availability of less restrictive care Area deprivation	M
Blank 1989[140]	Cohort	USA	274	All patients aged 55 and over admitted to an old age psychiatric unit in a non-profit teaching hospital in New York from Nov 1984 to Dec 1985	75 (27.3)	Gender, Marital status, Living situation, Diagnosis, Violence to others, Suicide attempts, Presentation, Social support	H
Bonsack 2005[141]	Cross-sectional	Switzerland	87	Self-completed questionnaire given to all inpatients of the psychiatric hospital of the University of Lausanne on May 10th 2002 (Response rate 96%)	30 (34.5)	Gender, Diagnosis	L
Bruns 1991[142]	Cohort	Germany	628	Patients who were involuntarily admitted into the psychiatric unit of the hospital Bremen-Ost and 300 randomly chosen controls who were voluntarily admitted between 1984 and 1985	328 (total not provided as control group are a randomly selected 300 voluntary patients)	Gender, Relationship status	L
Burnett 1999[143]	Cohort	England	100	First admissions with psychosis within South East London from April 1991 to March 1993	28 (28)	Pathways to care, Social support	M
Canova 2018[34]	Cohort	Brazil	137	Admissions to the psychiatry service of the University Hospital of Santa Maria from Aug 2012 to Jan 2013	71(51.8)	Gender, Living situation, Occupation Marital status, Presentation, Pathways to care, Risk to self, Risk to others, Social support, Education level	H

Casella 2014[144]	Cohort	Brazil	169	Consecutive discharges from the Philippe Pinel Psychiatric Hospital from May to Aug 2009. Those with diagnoses other than psychosis or bipolar affective disorder were excluded.	81 (48)	Gender, Marital status, Diagnosis, Previous admission, Presentation , Correct use of medication prior to admission, Risk to others, Risk to self, Social support	M
Chang 2013[145]	Cohort	Brazil	2289	All adults hospitalised in the Institute of Psychiatry of the Clinical Hospital, University of San Paulo between 2001 and 2008	305 (13.3)	Gender, Employment, Marital status, Education level, Diagnosis, Adherence to treatment prior to admission	L
Chiang 2017[146]	Cohort	Taiwan	26,611	All first admissions with psychosis in Taiwan between 2004 and 2007, identified using the national health insurance (NHI) database	2540 (9.5)	Gender, Employment, Previous admission	H
Cole 1995[147]	Cohort	England	93	People with first onset psychosis in the St Ann's Hospital psychiatric catchment area between 1 July 1991 and 31 June 1992	29 (31)	Age, Living situation, Employment, Pathways to care, Social support	M
Cougnard 2004[148]	Cohort	France	86	Consecutive admissions with psychosis in ten departments of psychiatry in the Bordeaux region between March 2001 and March 2002	53 (61.6)	Age, Gender, Living situation, Employment, Relationship status, Diagnosis, Presentation, Pathways to care, Risk to self, Criminal history, Social support, Educational level	H
Craw 2006[149]	Cohort	USA	227	Consecutively discharged patients from a large public sector hospital in Georgia from Dec 2003 to July 2004	171 (75.3)	Age, Gender, Living situation, Employment, Relationship status, Prior psychiatric hospitalisation, Presentation	H
Crisanti 2001[150]	Cohort	Canada	1718	Admissions to the Department of Psychiatry at the Calgary General Hospital between 1 April 1987 and 31 March 1995	711 (41.4)	Gender, Diagnosis, Criminal history	H
Curley 2016[33]	Cohort	Republic of Ireland	1099	All admissions to St Aloysius Ward, an acute adult psychiatric inpatient facility in North Dublin between 1 Jan 2008 and 31 Dec 2014	155 (14.1)	Area deprivation (other variables repeated in Kelly 2018)	H
de Girolamo 2009[151]	Cross-sectional national survey	Italy	1548	All patients admitted to public or private inpatient facilities in Italy (excluding Sicily) during a 12 day period in 2004	196 (12.6)	Gender, Housing status, Employment status, Relationship status, Diagnosis, Availability of less restrictive care, Presentation, , Referral pathway, Risk to self, Risk to others, Criminal history, Social support, Educational level	M
Delayahu 2014[152]	Cohort	Israel	24	Men aged 18-60 with a DSM-IV Axis I diagnosis and substance abuse disorder who were hospitalized in an acute psychiatric dual diagnosis ward in Israel in Feb-Mar and May-June 2004*	9 (37.5)	Age, Relationship status, Presentation on admission, Risk to self, Educational level	M
Di Lorenzo 2018[153]	Cohort	Italy	396	All patients admitted to an acute psychiatric ward in Northern Italy between 1st Jan 215 to 31st Dec 2015	160 (40)	Gender, Living arrangements, Diagnosis, Employment situation, Risk to self, Risk to others	M
Donisi 2016[154]	Cohort	Italy	74,931	All discharges from the 40 acute inpatient facilities in the Vento region between 2000 and 2007	3,975 (5.3)	Referral pathway	H
Emons 2014[134]	Cohort	Germany	230,678	All admissions to the largest provider of psychiatric services in Germany (Landschaftsverbands Westfalen-Lippe (LWL) from 2004 to 2009	17,206 (7.5)	Area deprivation, Availability of less restrictive care	M
Eytan 2013[155]	Cohort	Switzerland	2227	All admissions to an acute psychiatric facility in Switzerland over an 8 month period in 2006	1422 (63.9)	Gender, diagnosis, Previous admission	M

Fok 2014[156]	Cohort	England	14,233	Adult patients with Severe Mental Illness with and without co-morbid Personality Disorder (PD) between 1 Jan 2007 and 31 Dec 2011	3,748 (26)	Diagnosis, risk	H
Folnegovic´-Smalc 2000[157]	Cohort	Croatia	888	All admitted patients to two acute facilities in Croatia from 1 Jan 1997 to 30 June 1997	173 (19)	Gender, Diagnosis	M
Gaddini 2008[158]	Cross-sectional	Italy	7984	All adult inpatients in 369 psychiatric facilities across Italy (exc Sicily) on 8 May 2003	305 (3.8)	Pathways to care	M
Garcia Cabeza 1998[159]	Cross-sectional	Spain	367	All patients admitted to the acute unit at the psychiatric service of the hospital "Gregorio Marañon, Madrid in the first four months of 1994	67 (18)	Gender, Relationship status, Employment status, Living arrangements, Diagnosis, Pathways to care	M
Gou 2014[160]	Cohort	China	160	Consecutive admissions to an acute psychiatric facility in China between 26 July 2012 and 10 Sept 2012	85 (53.1)	Age, Gender, Employment, Relationship status, Diagnosis, Presentation on admission, Education	H
Gultekin 2013[161]	Cohort	Turkey	504	Patients admitted to an acute psychiatric facility in Turkey between 1 May 2010 and 31 Oct 2010 (who had been discharged at time of data collection)	66 (13.1)	Gender, Employment, Relationship status, Diagnosis, Education	H
Hansson 1999[135]	Cohort	Sweden, Norway, Finland, Denmark	2834	All new patients contacting the psychiatric services in 7 catchments areas over a 1-year period	219 (7.7)	Diagnosis, Pathways to care, Employment status	M
Hatling 2002[162]	Cohort	Norway	13985	Patients admitted to psychiatric facilities in general hospitals in Norway in 1996	6476 (46.3)	Gender, Employment, Relationship status, Diagnosis, Availability of inpatient beds	M
Hoffman 2017[163]	Cohort	Germany	213595	All admissions to the largest provider of psychiatric services in Germany (Landschaftsverbands Westfalen-Lippe (LWL)) from 2004 to 2009	17206 (8.1)	Gender, Relationship status, Diagnosis, Referral pathway, Previous admission	M
Hotzy 2019[164]	Cohort	Switzerland	31508	Includes all admissions to the University Hospital of Psychiatry in Zurich between 2008 and 2016. The number of admissions per patient ranged from 1-10, with median of 2, IQR 1-3	8843 (28.1)	Gender, Diagnosis, Education level	M
Houston 2001[165]	Cohort	USA	487	First admissions (unclear where to) between Oct 1986 and Dec 1990	282 (58)	Gender, Pathways to care	L
Hugo 1998[166]	Cohort	Australia	402	Inpatient admissions to an acute ward in Australia over an 8 month period	136 (34)	Diagnosis, Presentation, Risk to self Risk to others	L
Hustoft 2013[167]	Cohort	Norway	3326	Consecutive admissions to twenty acute psychiatric units in Norway from 2005 to 2006	1,453 (44)	Gender, Housing Stability, Employment, Relationship status, Presentation on admission, Referral pathway, Having social support, Education level, Risk to self, Risk to others	M
Ielmini 2018[168]	Cohort	Italy	200	200 adult psychiatric inpatients hospitalised at General Hospital Psychiatric Ward in Varese, from Jan 2014 to Mar 2017	100 (selected control group)	Age, Gender, Housing Stability, Employment, Relationship status, Presentation on admission, Risk to others, Having social support	M
Indu 2016[169]	Case-control	India	300	Consecutive compulsory admissions and the 2 following voluntary admissions to the Government Mental Health Centre in Thiruvananthapuram from June 2010 to Feb 2011	100 (33)	Gender, Housing Stability, Employment status, Relationship status, Diagnosis, Previous involuntary admission,	M

						Presentation, Compliance, Having social support, Education level	
Isohanni 1990[170]	Case-control	Finland	1586	Admissions to a closed psychiatric ward with modified therapeutic community principles in Oulu between 1978 and 1987	215 (13.6)	Age, Diagnosis, Previous admission	M
Iversen 2002[171]	Cohort	Norway	223	All patients admitted to 4 acute wards in Norway from Oct 1998 to Nov 1999	150 (67)	Gender, Diagnosis, Presentation	M
Kelly 2004[172]	Cohort	Republic of Ireland	78	Patients with first episode psychosis admitted to 2 psychiatric hospitals in Dublin over a 4-year period	17 (22)	Age, Gender, Presentation	M
Kelly 2018[173]	Cohort	Republic of Ireland	2940	All adult admissions to three acute psychiatric hospitals in Dublin from 2008 to 2015 (Dublin Involuntary Admission Study)	423 (14.4)	Gender, Employment, Relationship status, Diagnosis	M
Keown 2016[9]	Cohort	England	Population of 138 primary care trusts	All adult psychiatric admissions in England in 2010-11. Data from the Mental Health Minimum Data Set (MHMDS)	unclear	Area Deprivation Control group are the population of the trusts who were not hospitalised involuntarily	H
Lastra Martinez 1993[174]	Cross-sectional	Spain	298	Clinical records of patients admitted to the acute unit of the psychiatric service of a general hospital (San Carlos University Hospital) in Madrid between March 1990 and February 1991	148 (voluntary group is a selected control group)	Gender, Relationship status, Risk to self, Risk to others	M
Lay 2011[175]	Cohort	Switzerland	9698	All patients admitted to psychiatric inpatient facilities in Zurich in 2007	2,406 (24.8)	Age, Gender, Housing stability Employment, Diagnosis, Inpatient beds, Education level, Presentation on admission	M
Lebenbaum 2018[176]	Cohort	Canada	115515	All patients admitted to mental health beds in Ontario from 2009 to 2013	85607 (74.1)	Gender, Housing Stability, Diagnosis, Previous involuntary admission, Referral Pathways, Risk to self, Risk to others, Presentation on admission	H
Leung 1993[177]	Case-control	USA	44	Admissions of Indochinese patients to a psychiatric facility in Oregon in 1985 and 1986. All involuntary admissions were included and same number of voluntary patients selected randomly	22 (selected control group)	Gender, Housing Stability, Employment, Relationship status, Diagnosis, Previous involuntary admission, Previous admission, Education level	M
Lin 2018[178]	Case-control	Taiwan	10190	All inpatients in Taiwan with a principal diagnosis of schizophrenia between 2007 and 2013. All involuntary patients included and matched to 4 voluntary patients based on age, gender and year of admission	2,038 (selected control group)	Risk to self, Previous admission	M
Lorant 2007[179]	Cohort	Belgium	346	Random sample of 1200 patients referred to one of six psychiatric inpatient units in Brussels in 2004	154 (44.5)	Age, Availability of less restrictive care, Compliance with treatment before admission, Danger to self, Danger to others	H
Luo 2019[180]	Cross-sectional	China	155	All patients with a diagnosis of bipolar affective disorder admitted to 16 psychiatric institutions in China in an index month (!5 March to 15 April 2013)	81 (52)	Gender, Employment status, Relationship status, Education level, Previous outpatient treatment, Previous	M

						hospitalisation, Risk to self, Risk to others, Presentation	
Malla 1987[181]	Cohort	Canada	5729	Consecutive admissions to four psychiatric facilities in Ontario between Oct 1975 and Oct 1978	724 (12.6)	Gender, Employment, ,Relationship status, Referral Pathways, Diagnosis, Risk to self, Risk to others	M
Mandarelli 2014[182]	Case-control	Italy	60	Consecutive involuntary admissions to a psychiatric inpatient unit in Rome between Oct 2009 and Apr 2010. Each age and sex matched to a voluntarily admitted patient from the same hospital over the same period	30 (selected control group)	Relationship status, Diagnosis, Presentation, Risk to self	M
Montemagni 2011[183]	Cohort	Italy	119	Patients with schizophrenia consecutively admitted to an emergency psychiatric ward in Turin between Dec 2007 and Dec 2009	34 (28.5)	Age, Gender, Employment, Relationship status, Previous involuntary admission, Presentation	M
Montemagni 2012[184]	Cohort	Italy	848	Consecutive admissions to an emergency psychiatric ward in Turin between Jan 2007 and Dec 2008	146 (17)	Age, Diagnosis, Education level, Risk to self, Presentation	M
Myklebust 2012[36]	Cohort	Norway	1963	Admissions to a psychiatric hospital in Northern Norway from 2003 to 2006	183 (9.3)	Age, Gender, Diagnosis, Presentation on admission, Referral pathway	M
Okin 1986[185]	Cross-sectional	USA	198	All admissions to seven state psychiatric hospitals in Massachusetts over a 2-week period in 1981	94 (47.5)	Gender, Housing stability, Diagnosis, Previous admission, Relationship status, Education, Risk to self, Risk to others	L
Olajide 2016[186]	Cohort	England	2087	Patients referred for an MHA assessment in London, Birmingham, or Oxfordshire between July and Oct 2008-2011	1396 (66.9)	Age, Diagnosis, Risk to self, Risk to others	M
Opjordsmoen 2010[187]	Cohort	Norway	217	Inpatients with first episode psychosis in four psychiatric facilities in Norway from Jan 1997 to Dec 2000	126 (58.1)	Gender, Relationship status, Presentation, Education level	M
Opsal 2011[188]	Cross-sectional	Norway	1187	All patients with a history of substance abuse admitted to 39 acute psychiatric wards in Norway over a 3-month period in 2005-2006	361 (30.4)	Gender, Housing stability, Employment status, Diagnosis, Presentation, Risk to self, Referral pathways	M
Polachek 2017[189]	Cohort	Israel	5411	All patients with a diagnosis of a psychotic disorder discharged from a mental health centre between Jan 2010 and April 2013	2109 (39)	Gender	L
Riecher 1991[29]	Cohort	Germany	10749	All patients admitted to psychiatric hospital in Baden-Wurttemberg from 1 Jan 1984 to 30 June 1986	517 (4.8)	Gender, Housing stability, Employment, Relationship status Diagnosis, Previous admission	M
Ritsner 2014[190]	Cohort	Israel	439	All patients admitted to the Sh'ar Menashe Mental Health Centre between 1 Mar 2012 and 28 Feb 2013	106 (24.1)	Age, Gender, Diagnosis, Presentation, Risk to self	L
Rodrigues 2019[191]	Cohort	Canada	5191	All patients from a cohort of young people (aged 16-35) with a diagnosis of non-affective psychosis who were hospitalised over a 2 year follow up period from the initial diagnosis	4208 (84)	Gender, Living arrangements, Social support, Risk to self, Risk to others, Presentation, Adherence to treatment prior to hospitalisation	H
Rooney 1996[192]	Case-control	Republic of Ireland	101	Consecutive involuntary admissions to an inpatient psychiatric unit in Dublin over 6 months were compared to a sample of voluntary patients in the same hospital	58 (57.4)	Gender, Diagnosis, Referral pathways, Risk to self, Risk to others	L
Schmitz-Buhl 2019[193]	Cohort	Germany	5764	All patients treated as inpatients under the Mental Health Act for the state of North Rhine-Westphalia in Cologne in 2011. 3991 patients treated voluntarily in the same hospitals over the same period served as a control group	1773 (voluntary group is a selected control group)	Education level, Risk to self	M

Schuepbach 2006[194]	Cohort	Switzerland	86	Inpatients with an acutely manic or mixed episode of bipolar disorder in the Swiss cohort of the European Mania in Bipolar Longitudinal Evaluation of Medication (EMBLEM) study	55 (64)	Gender, Relationship status, Presentation on admission, Compliance with medication prior to admission	M
Schuepbach 2008[195]	Cross-sectional	Data collected from up to 14 European countries	1374	A sample of inpatients with an acutely manic or mixed episode of bipolar disorder enrolled in the European Mania in Bipolar Longitudinal Evaluation of Medication (EMBLEM) study	561 (40.8)	Gender, Housing stability, Relationship status, Presentation, Compliance with medication prior to admission, Risk to self, Education level	M
Serfaty and McCluskey 1998[196]	Case series	England	12	A sample of 11 inpatients with a diagnosis of an eating disorder	7 (58.3)	Diagnosis, Presentation	L
Silva 2018[197]	Cohort	Switzerland	5027	All consecutive admissions to 4 psychiatric hospitals in the Canton of Vaud, Switzerland between 1st Jan 2015 and 31st Dec 2015	1918 (38.2)	Gender, Marital status, Diagnosis, Presentation, Risk to self, Risk to others, Previous psychiatric hospitalisation, Previous involuntary hospitalisation	H
Spengler 1986[198]	Cohort	Germany	206	Consecutive new contacts with psychiatric emergency dept that were admitted to public psychiatric hospitals in Hamburg from Jan 1980 to Sept 1981	122 (59.2)	Gender, Housing stability, Employment, Relationship status, Diagnosis, Presentation, Compliance with treatment prior to admission, Risk to self, Risk to others, Social support	H
Stylianidis 2017[199]	Cohort	Greece	715	All patients admitted to the Psychiatric Hospital of Attica from June to Oct 2011	427 (59.7)	Age, Gender, Employment status, Relationship status, Diagnosis, Previous admission, Social support, Education	H
Tørrissen 2007[200]	Cohort	Norway	104	All patients discharged from an acute ward in the Norwegian county, Hedmark from Jan 2005 to June 2005	49 (47)	Age, Diagnosis	L
Van der post 2009[201]	Cohort	Netherlands	7600	Consecutive patients presenting to emergency psychiatric services in Amsterdam and admitted to an inpatient unit between 15 Sept 2004 and 15 Sept 2006	352 (46.3)	Previous involuntary admission, Referral pathway, Presentation, Risk to self, Risk to others	M
Wang 2015[202]	Cohort	Taiwan	2777	Admissions to psychiatric hospital from the emergency psychiatric service from Jan 2009 to Dec 2010	110 (4.0)	Age, Gender, Diagnosis, Presentation on admission, Referral pathways, Risk to self	M
Watson 2000[203]	Cohort	USA	397	Consecutive patients with an eating disorder referred for admission in the University of Iowa hospital between July 1991 and June 1998	66 (16.6)	Gender, Relationship status	L
Weich 2017[3]	Cross-sectional	England	1238188 total sample 104647 inpatient admissions	All patients who received care in 64 NHS provider trusts in 2010-2011. Data from the Mental Health Minimum Data Set (MHMDS)	42915 (3.5% of total sample, 41.0% of the inpatient sample)	Gender, Area deprivation, Inpatient beds Availability of less restrictive care. (Control group are the patients in the 64 NHS trusts who were not hospitalised involuntarily.)	H

Note: Control groups are patients hospitalised voluntarily vs those in hospital involuntarily within the same cohort, unless otherwise stated.

Figure 4.2: Funnel plot for gender

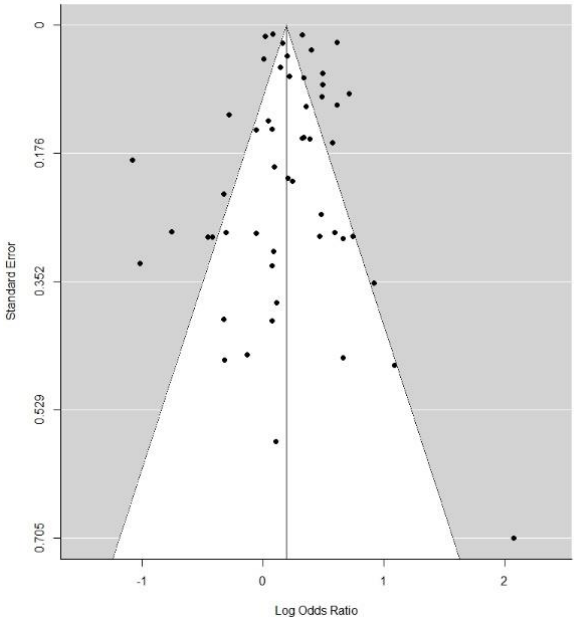


Figure 4.3: Funnel plot for diagnosis

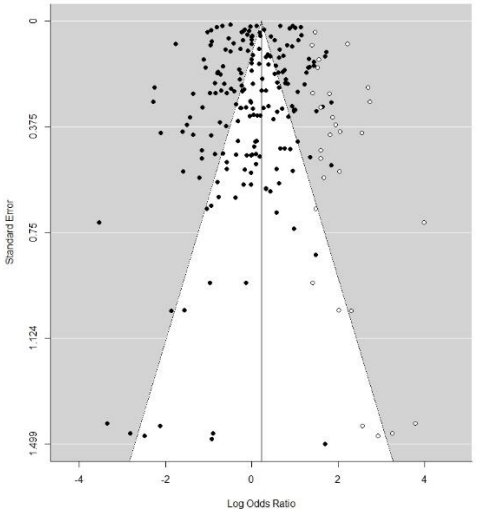
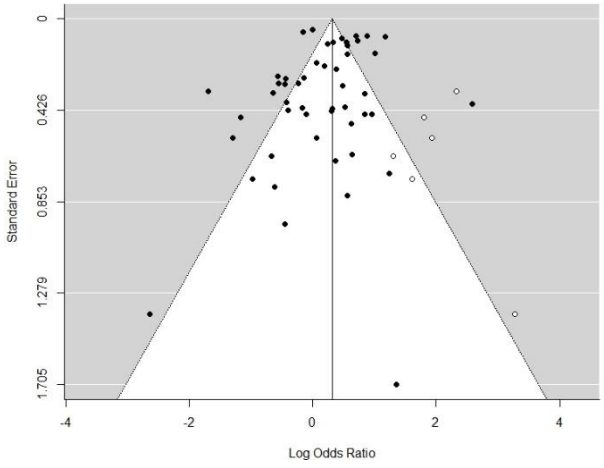


Figure 4.4 Funnel plot for employment



4.4.2 Study quality

Most studies were rated as 'moderate' in quality (42 studies), about a third were rated 'high' (22 studies), and the remainder were rated 'low' (13 studies). See Appendix A. Most studies had clear objectives and appropriate study designs, but most did not justify their sample sizes and therefore, some of the smaller studies may have been under-powered. Many did not consider or control for potential confounding factors in their analysis, or fully report results from statistical tests, for example, omitting p values or measures of precision (such as standard errors or confidence intervals).

4.4.3 Meta-analysis

Fifty-six studies presented data in a format which was suitable for meta-analysis (total sample size = 580,022). (Appendix A) These studies all compared inpatients who were hospitalised involuntarily with those hospitalised voluntarily and contained data on at least one of the following seven variables: gender, diagnosis, employment, housing, relationship status, previous involuntary hospitalisation, previous hospital admission. The remaining 21 studies either did not compare voluntary with involuntary patients (for example those that looked at the use of involuntary hospitalisation on a population level) or did not provide adequate or appropriate data for input into the meta-analyses (for example, not providing clear sample sizes in the voluntary and involuntary groups in relation to any of the seven variables listed above.) The meta-analysis results are presented in table 4.3, and analysis of the high-quality studies only is presented in table 4.4.

Table 4.3: Meta-analysis of risk factors for involuntary care

	Risk Factor	**K**	**OR (95% CI)**	**I^2**
Gender	Male (vs female)	51	1.23 (1.14, 1.32)	94.22%
Diagnosis	Psychoses	37	2.18 (1.95, 2.44)	94.78%
	Bipolar	14	1.48 (1.24, 1.76)	61.24%
	Depression	10	0.22 (0.15, 0.33)	85.87%
	Mood Disorder	20	0.59 (0.50, 0.69)	95.73%
	Anxiety	11	0.80 (0.68, 0.95)	76.22%
	Personality Disorder	26	0.78 (0.65, 0.93)	92.66%
	Anorexia	2	1.19 (0.21, 6.72)	95.99%
	Substance Misuse	23	0.81 (0.66, 1.00)	95.19%
	Organic Disorder	14	1.57 (1.08, 2.27)	97.82%
	Neurosis	8	0.37 (0.19, 0.73)	98.11%

Employment	Unemployed	20	1.43 (1.07, 1.90)	91.28%
	Student	3	0.88 (0.28, 2.79)	74.61%
	Homeworker	2	1.36 (0.27, 6.83)	75.83%
	Welfare Benefits	8	1.71 (1.28, 2.27)	71.73%
	Retired	7	1.41 (0.92, 2.17)	76.62%
Housing	Homeless	7	1.22 (0.88, 1.69)	91.27%
	Living Alone	13	1.24 (0.94, 1.65)	75.37%
	Friend or Relative	6	1.14 (0.73, 1.78)	69%
	Living in an institution	5	0.88 (0.47, 1.63)	71.41%
	Non-owner vs owner	3	1.49 (1.04, 2.15)	87.02%
Relationship	Single	28	1.47 (1.18, 1.83)	97.22%
	Separated/Divorced	11	0.96 (0.67, 1.39)	75.46%
	Widowed	7	0.81 (0.32, 2.05)	89.36%
	Previously Married	6	1.26 (1.12, 1.42)	59.21%
Previous involuntary hospitalisation	Previous vs No Previous	6	2.17 (1.62, 2.91)	84.23%
Previous Admission	Previous vs No Previous	12	0.86 (0.58, 1.28)	94.22%

Note: K = number of studies

Table 4.4: Meta-analysis of risk factors for involuntary care, restricted to high quality studies

	Risk Factor	**K**	**OR (95% CI)**	**I^2**
Gender	Male (vs female)	16	1.32 (1.16, 1.51)	96.90%
Diagnosis	Psychoses	10	2.19 (1.80, 2.66)	94.85%
	Bipolar	3	1.06 (0.70, 1.60)	67.37%
	Depression	2	0.10 (0.06, 0.17)	0%
	Mood Disorder	6	0.46 (0.36, 0.60)	97.12%
	Anxiety	2	0.56 (0.09, 3.42)	53.16%
	Personality Disorder	5	0.60 (0.37, 0.98)	93.12%
	Anorexia	0	-	-
	Substance Misuse	4	0.66 (0.52, 0.84)	9.20%
	Organic Disorder	4	1.92 (0.72, 5.08)	97.76%
	Neurosis	2	0.55 (0.45, 0.67)	0%
Employment	Unemployed	7	1.46 (1.04, 2.05)	32.80%
	Student	1	-	-
	Homeworker	2	1.36 (0.27, 6.83)	75.83%
	Welfare Benefits	1	-	-

	Retired	3	1.19 (0.50, 2.81)	49.65%
Housing	Homeless	3	0.58 (0.22, 1.57)	85.07%
	Living Alone	5	0.68 (0.39, 1.20)	67.82%
	Friend or Relative	1	-	-
	Living in an institution	2	0.72 (0.06, 9.42)	88.63%
	Non-owner vs owner	1	-	-
Relationship	Single	9	1.18 (0.85, 1.64)	91.72%
	Separated/Divorced	4	0.53 (0.23, 1.25)	89.62%
	Widowed	3	1.27 (0.37, 4.46)	90.20%
	Previously Married	3	1.12 (1.06, 1.20)	0%
Previous involuntary hospitalisation	Yes vs No	2	1.58 (1.32, 1.90)	82.68%
Previous Admission	Yes vs No	5	0.75 (0.55, 1.02)	94.71%

Forest Plots

Figure 4.5 Gender

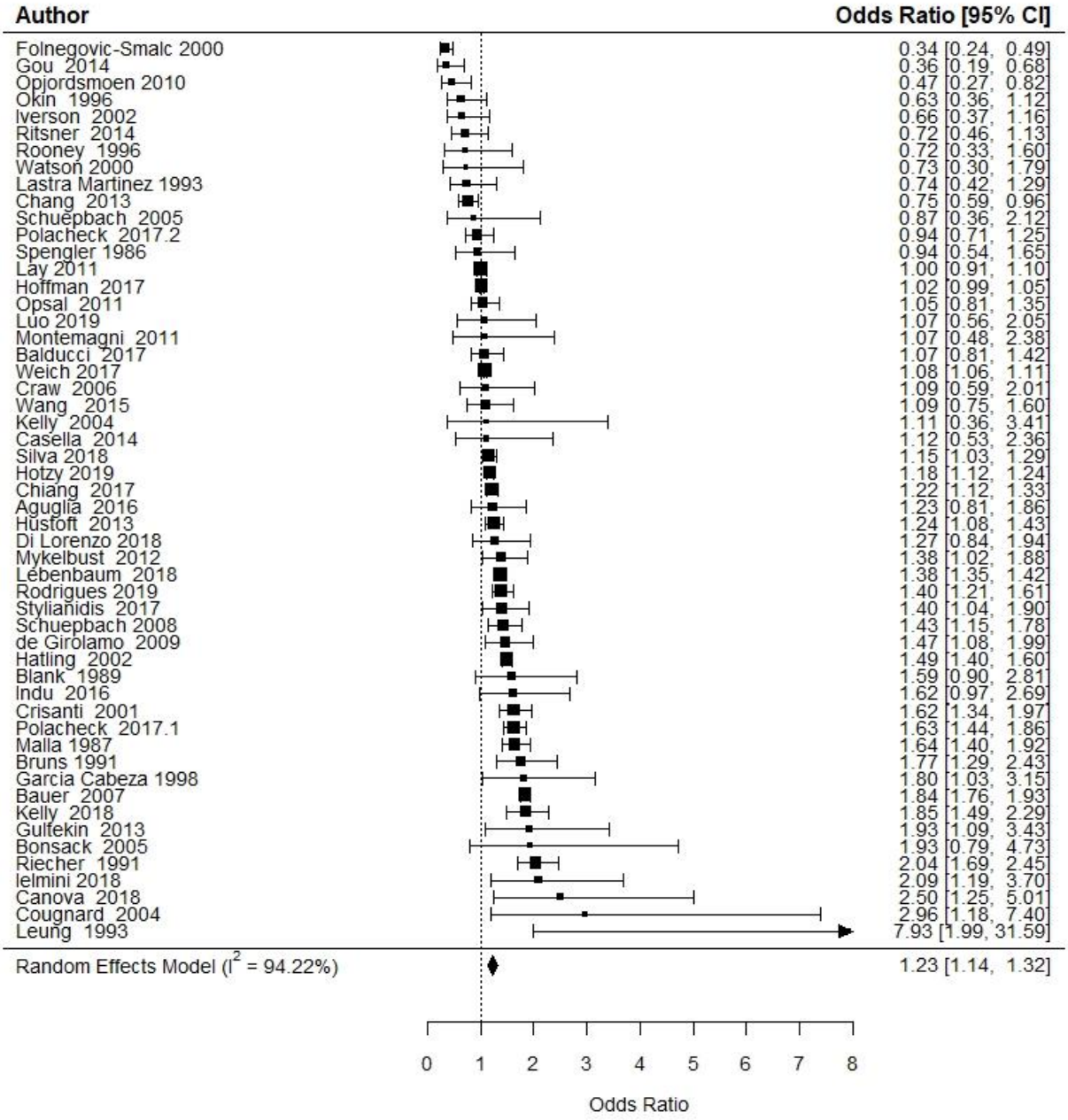
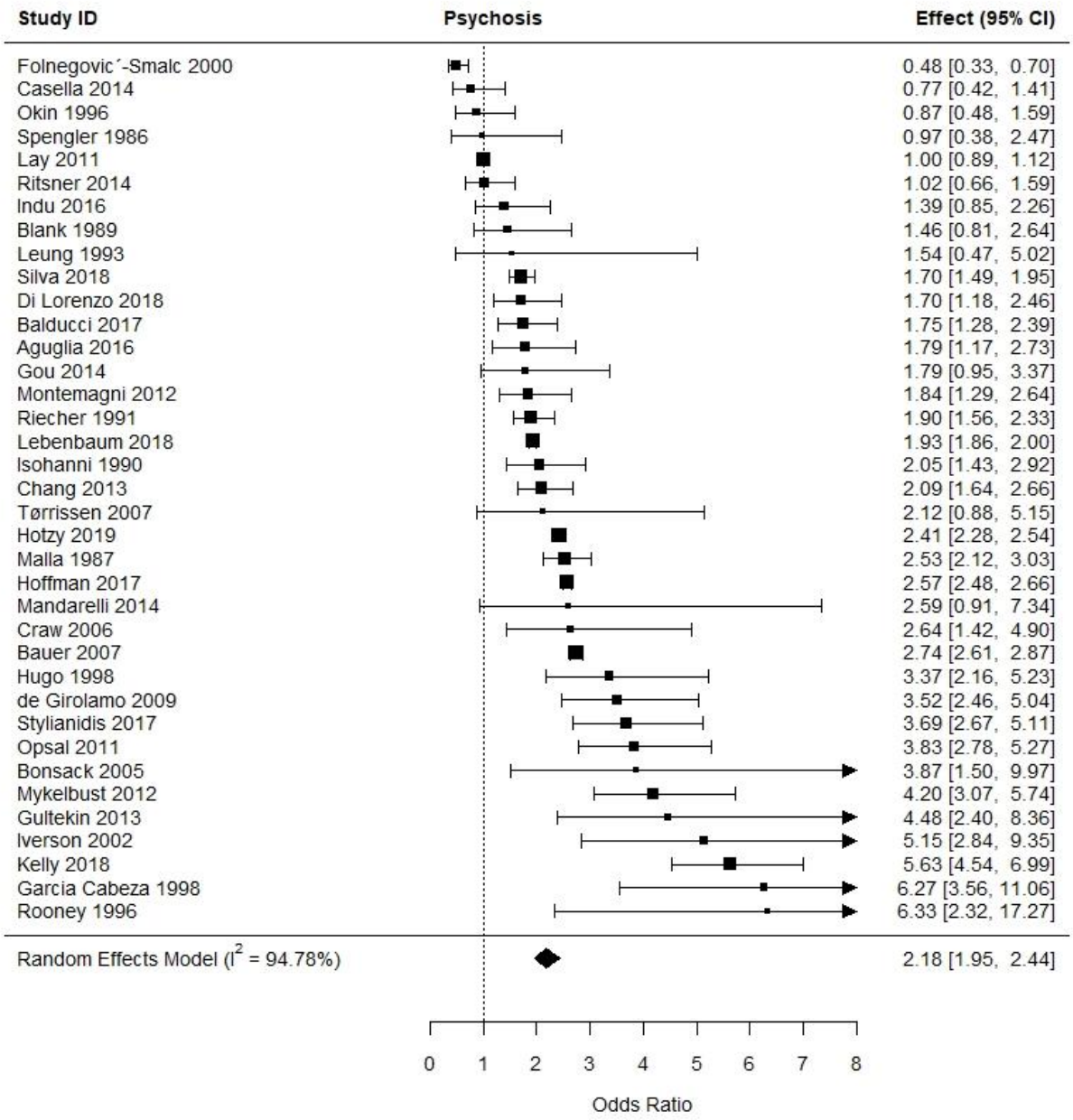
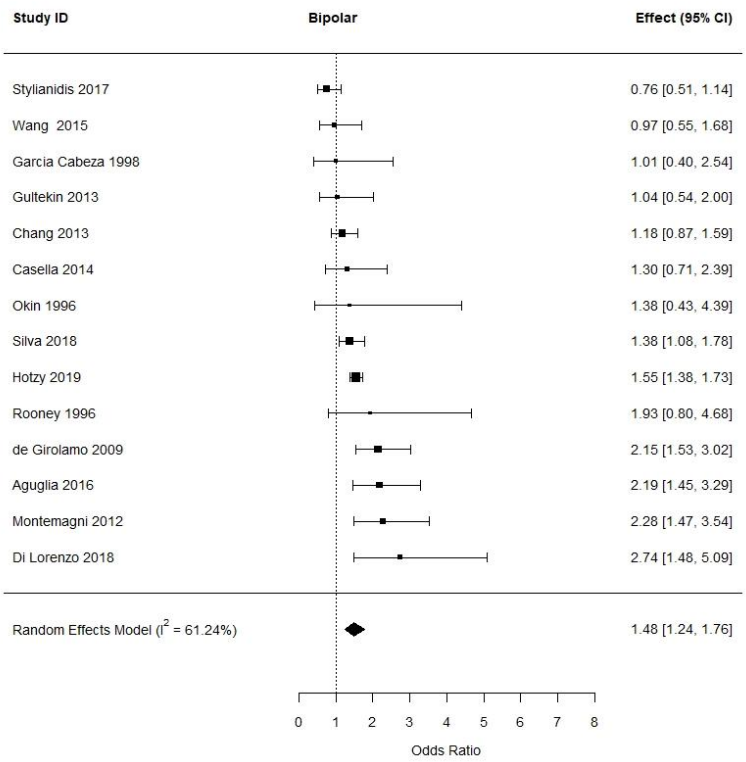


Figure 4.6: Diagnosis

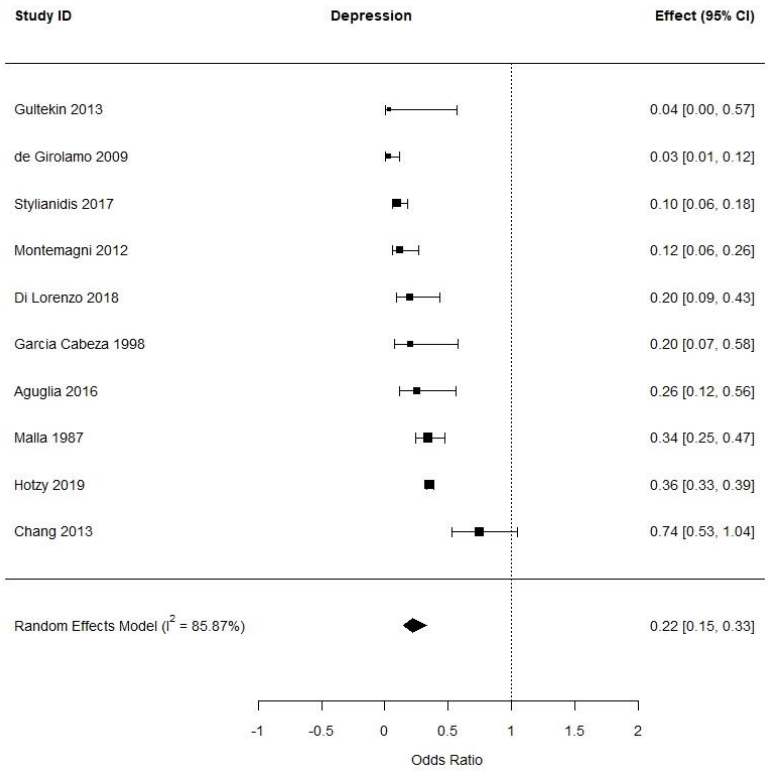
i) Psychosis



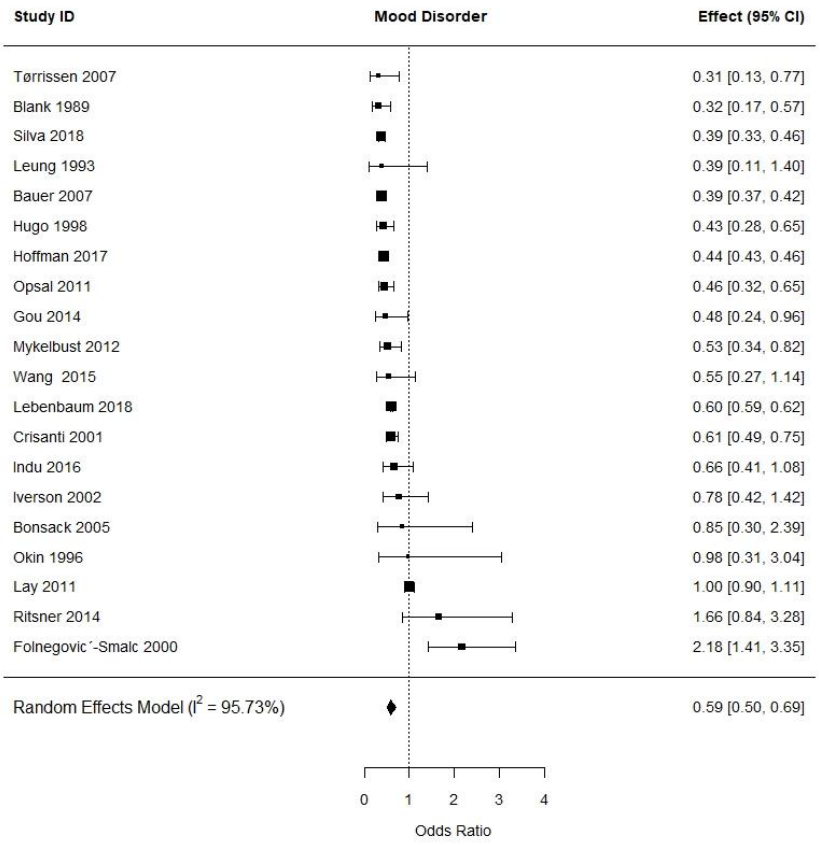
ii) Bipolar Affective Disorder



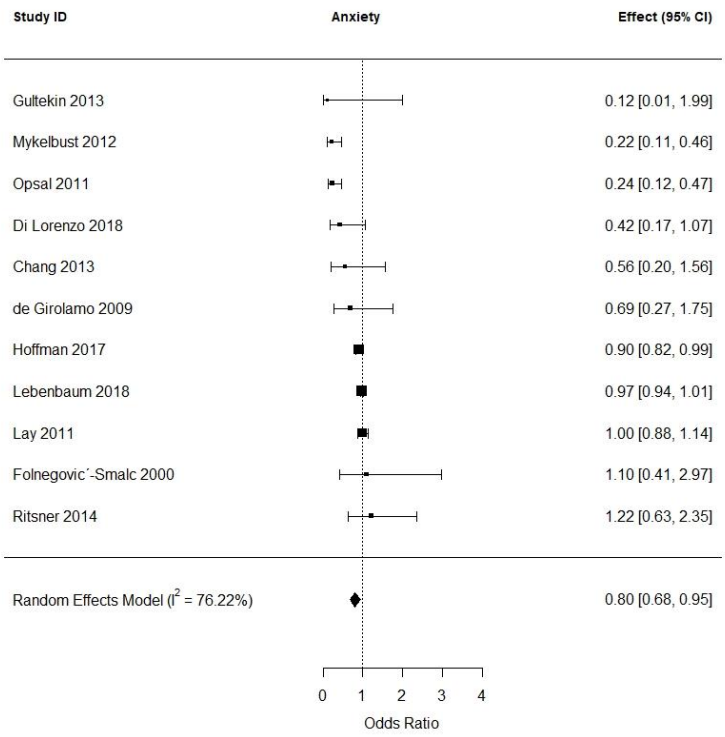
iii) Depression



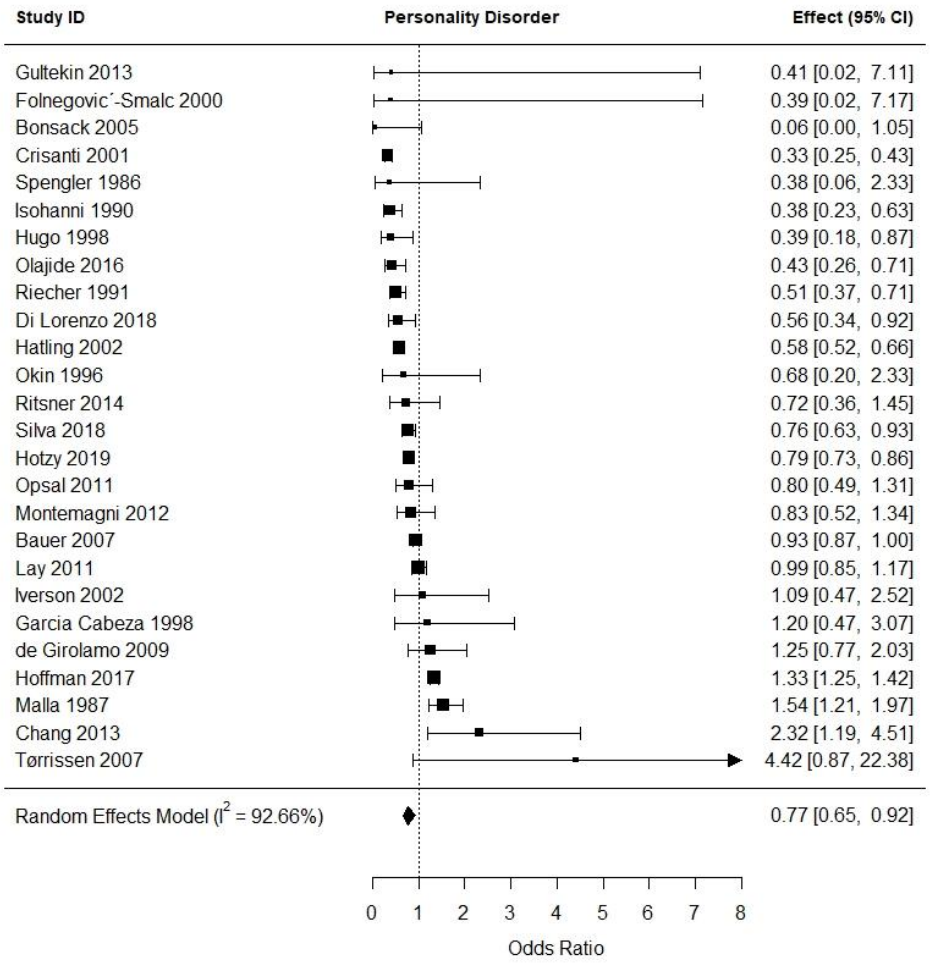
iv) Mood disorder



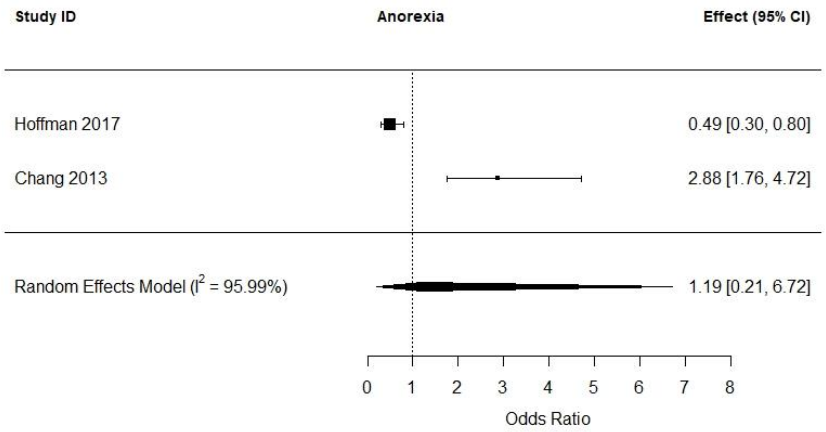
v) Anxiety



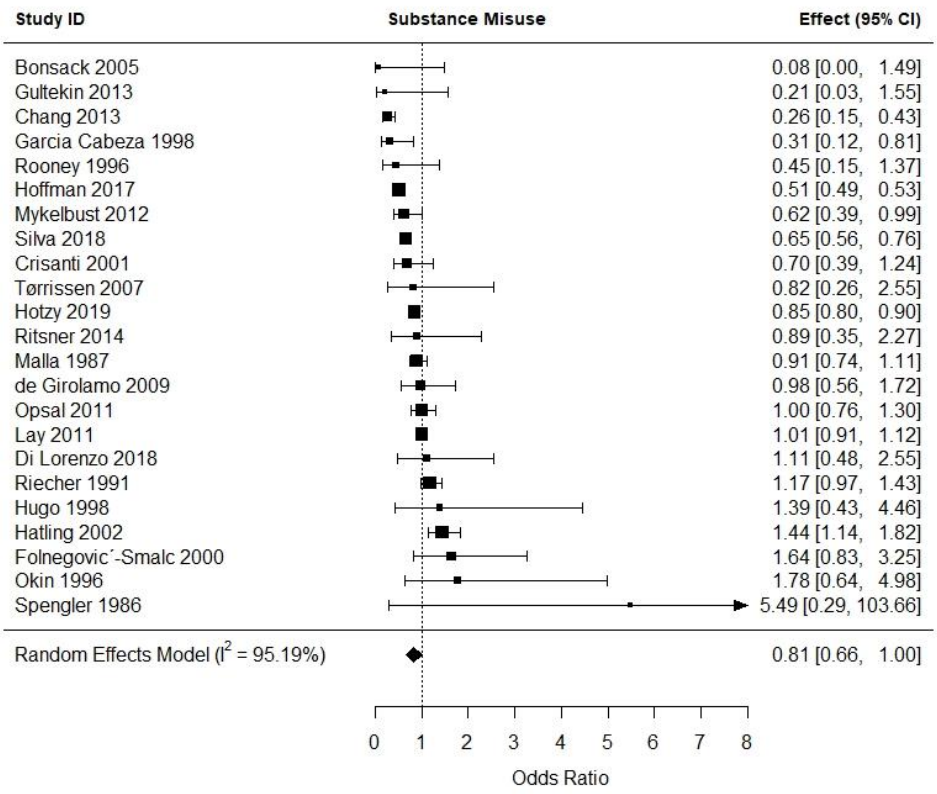
vi) Personality Disorder



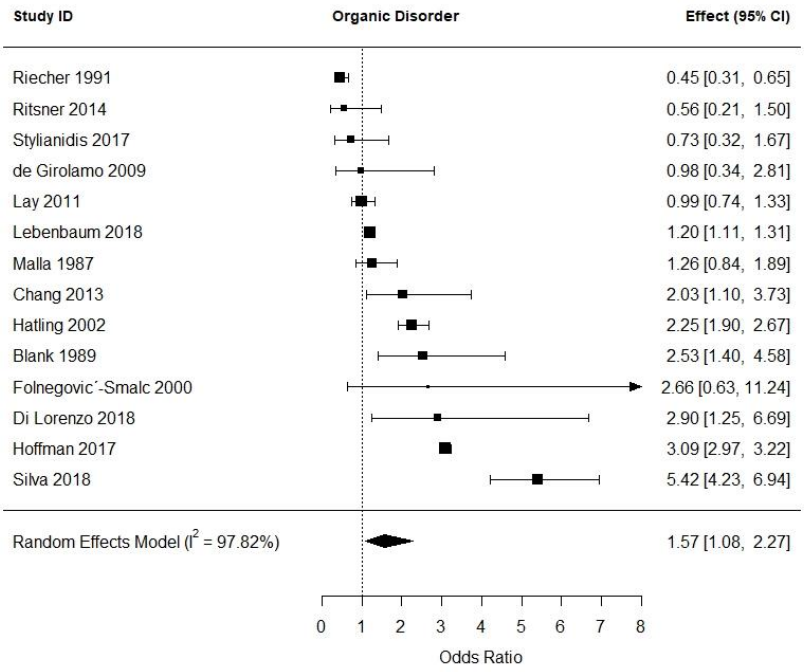
vii) Anorexia



viii) Substance misuse



ix) Organic disorder



x) Neurosis

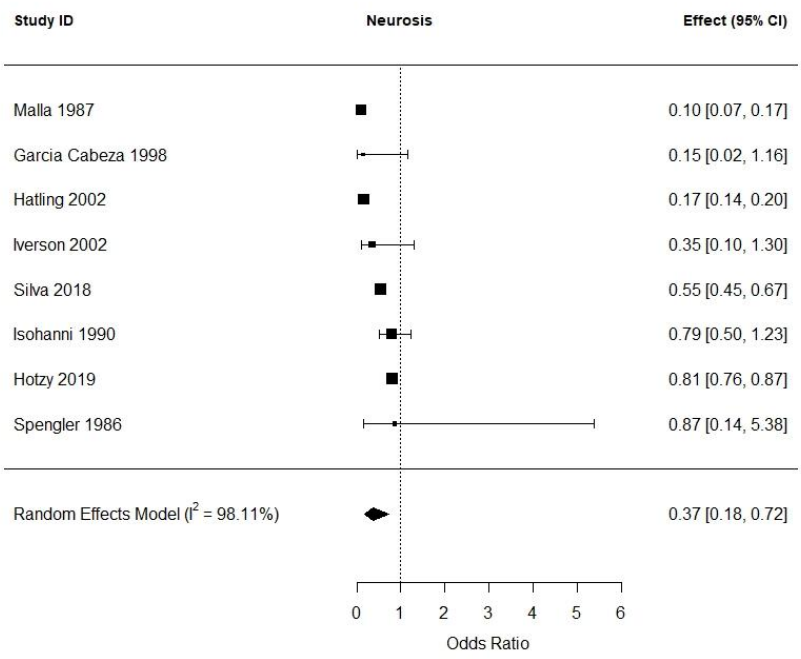
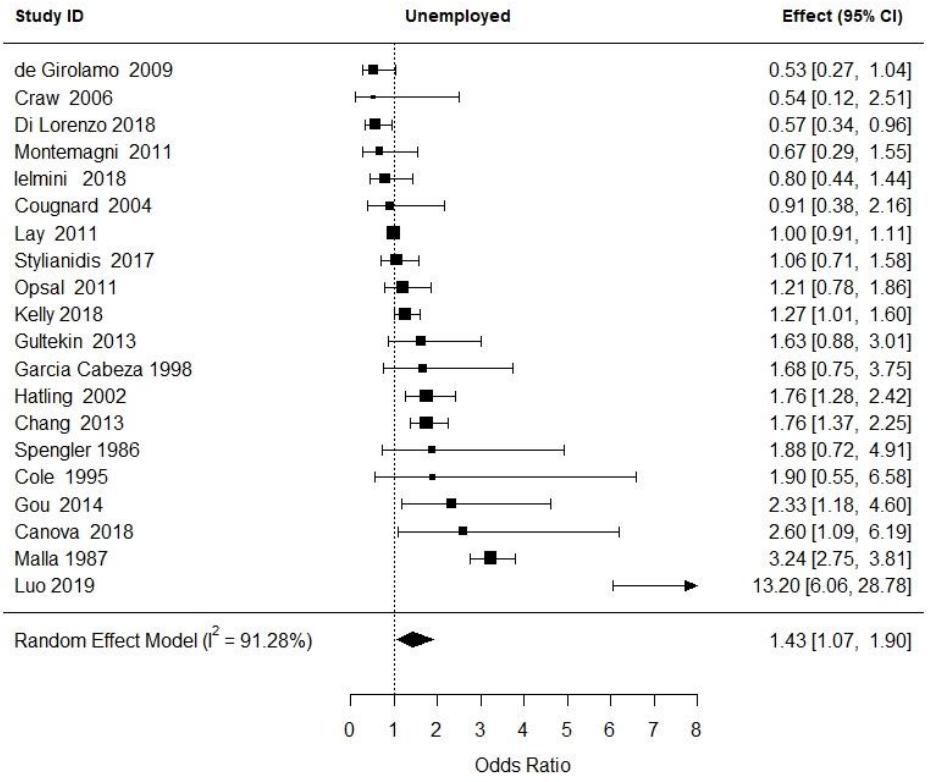
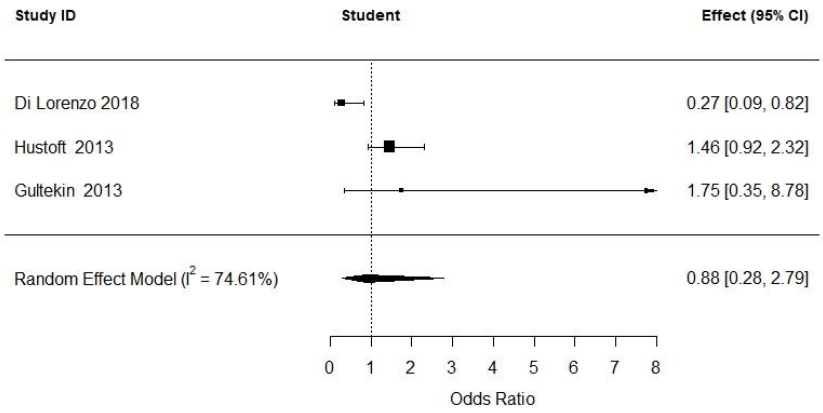


Figure 4.7 Employment and finances

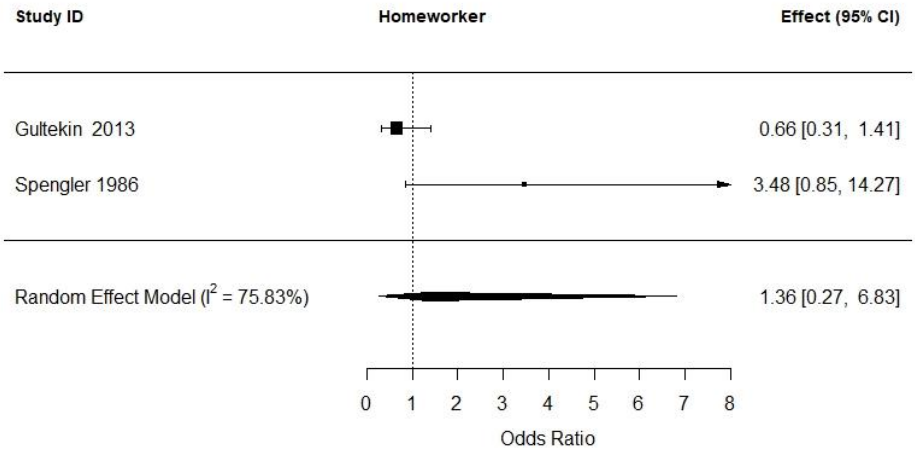
i) Unemployment



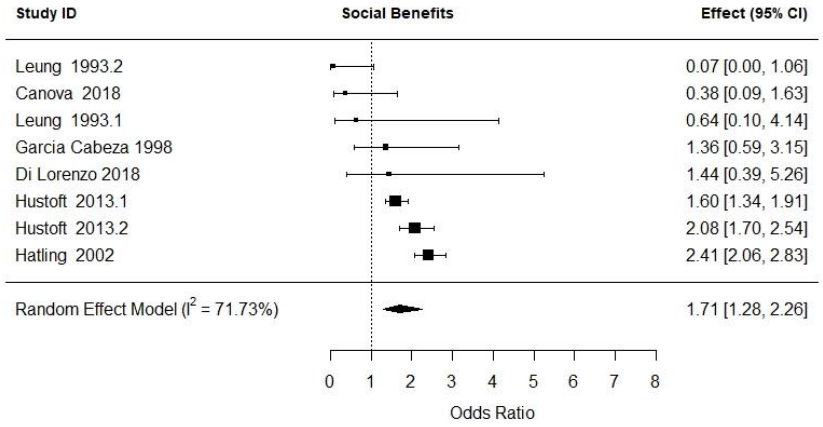
ii) Student



iii) Homeworker



iv) Welfare Benefits



v) Retired

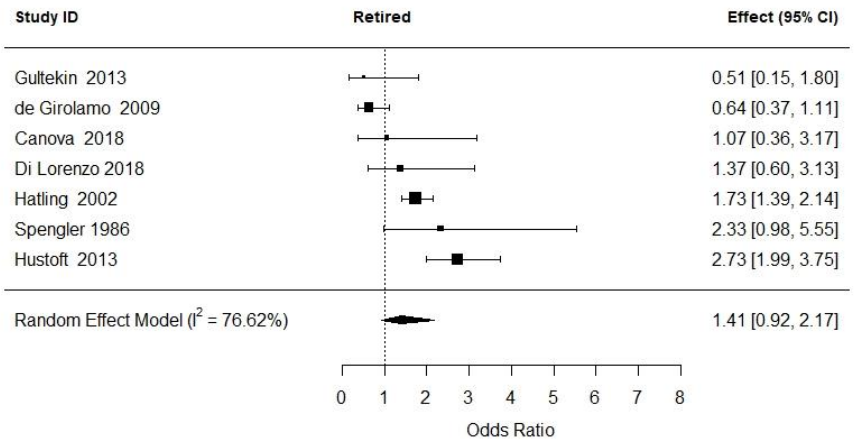
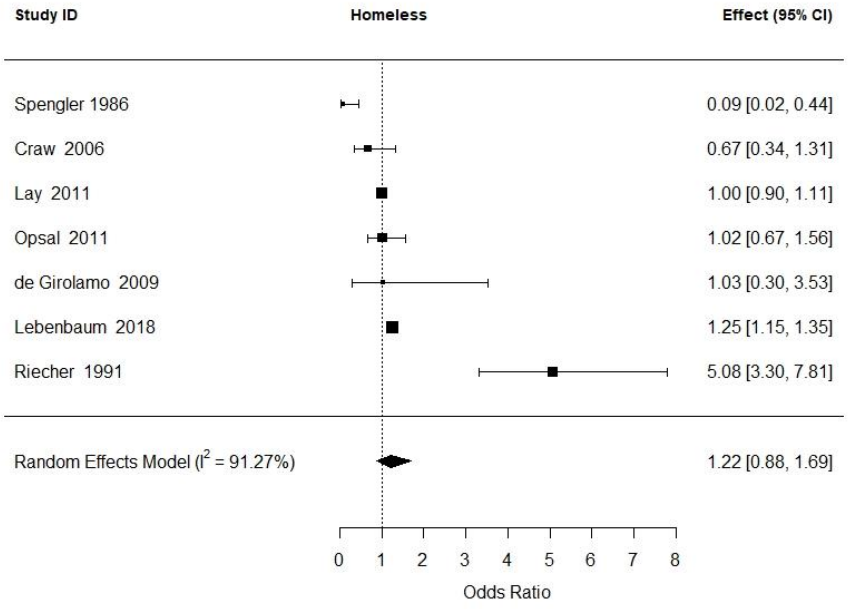
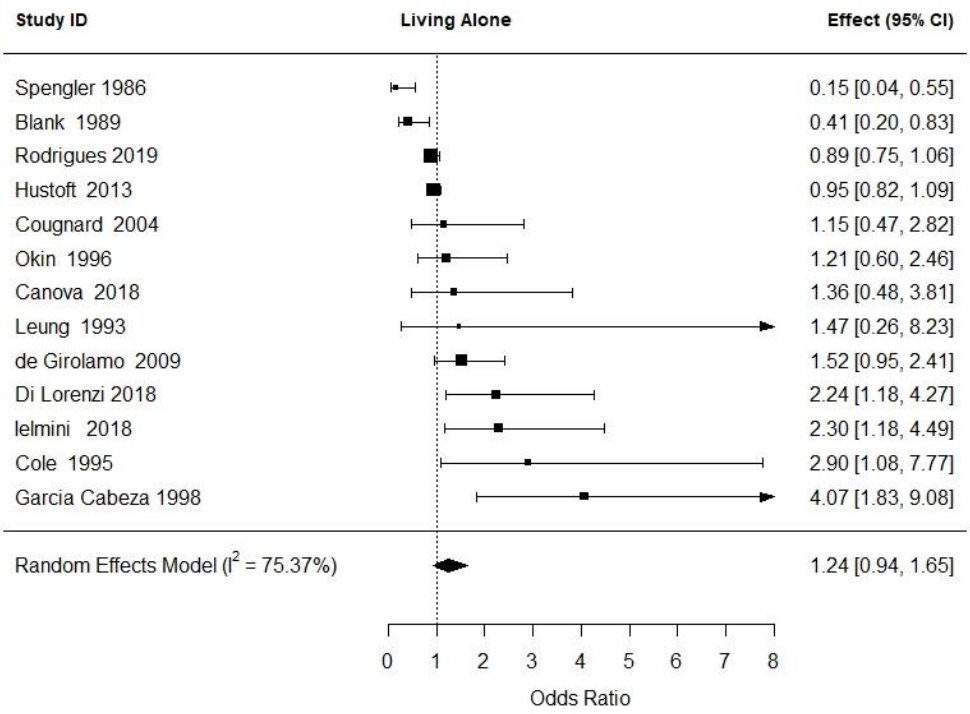


Figure 4.8 Housing/Living situation

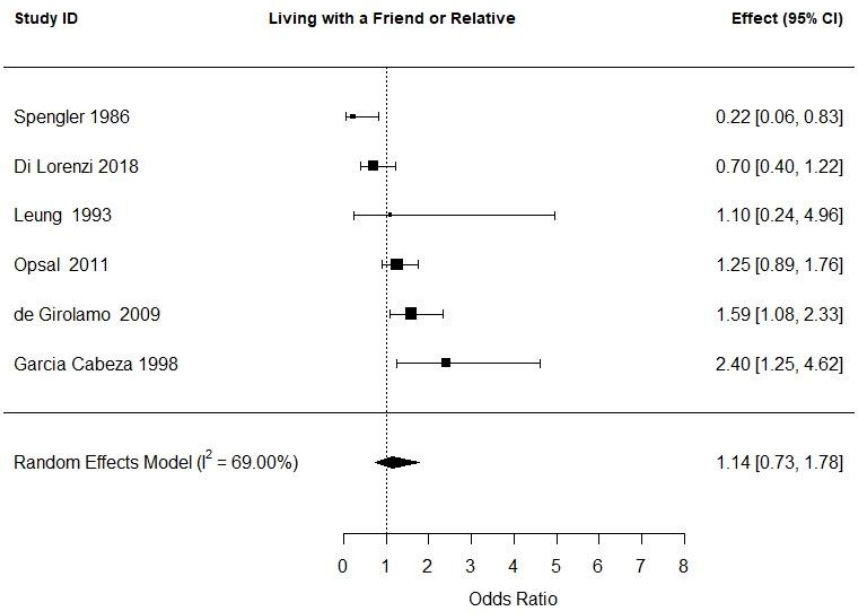
i) Homeless



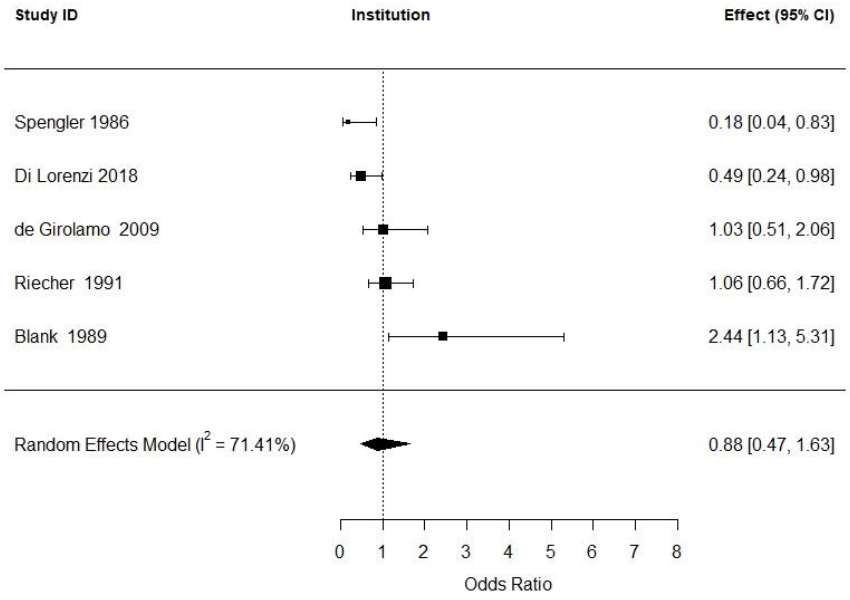
ii) Living Alone



iii) Living with friend or relative



iv) Living in an institution



v) Non-homeowner vs owner

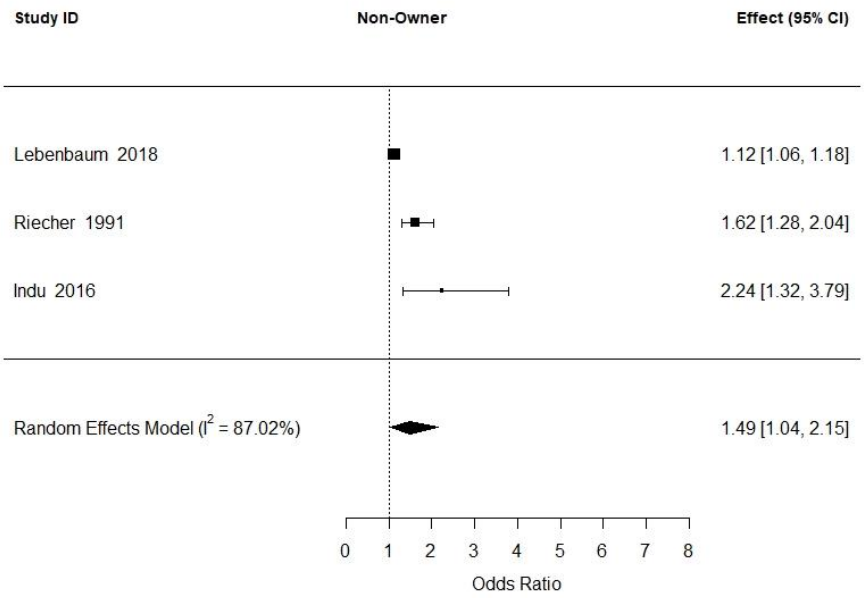
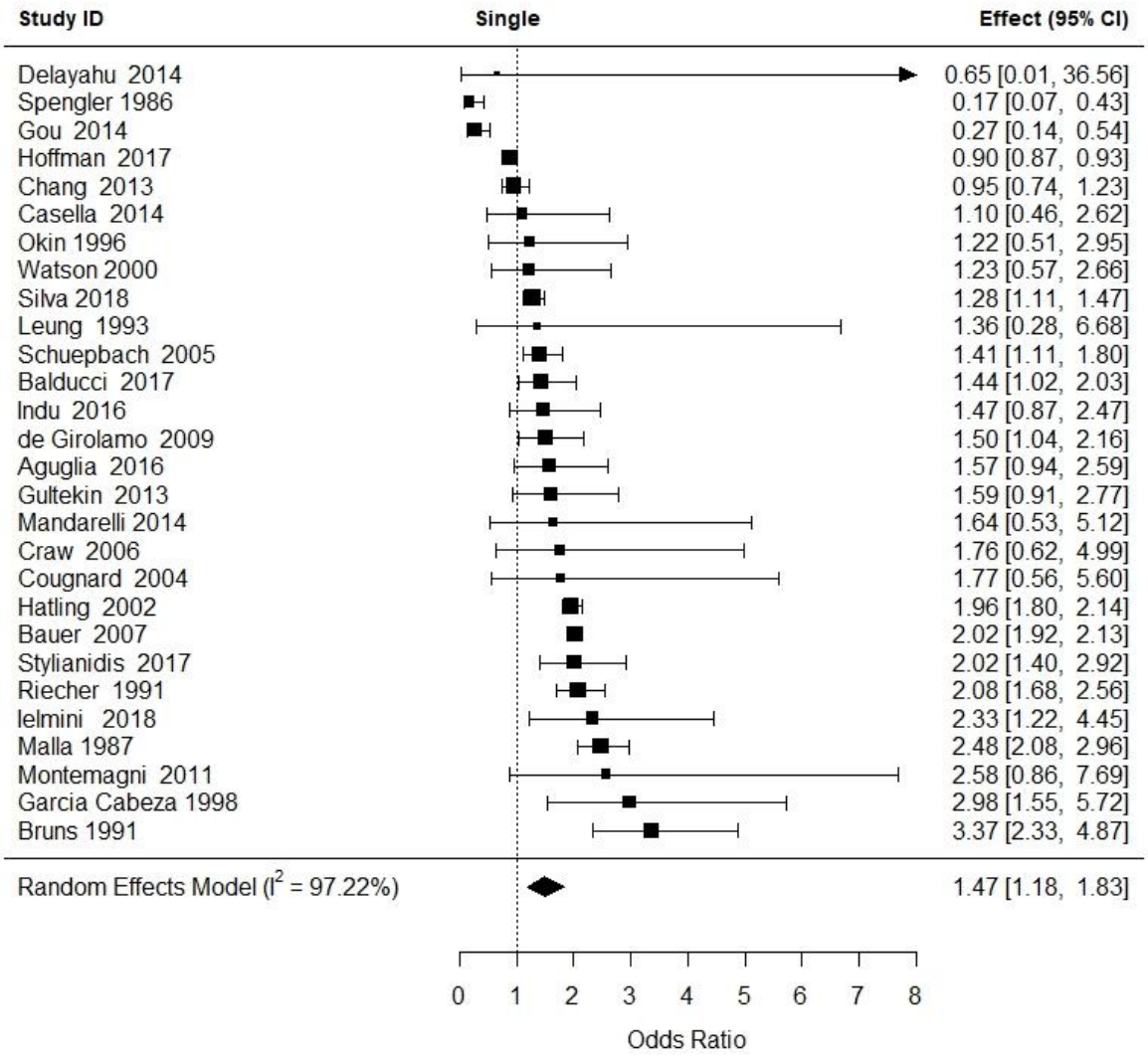
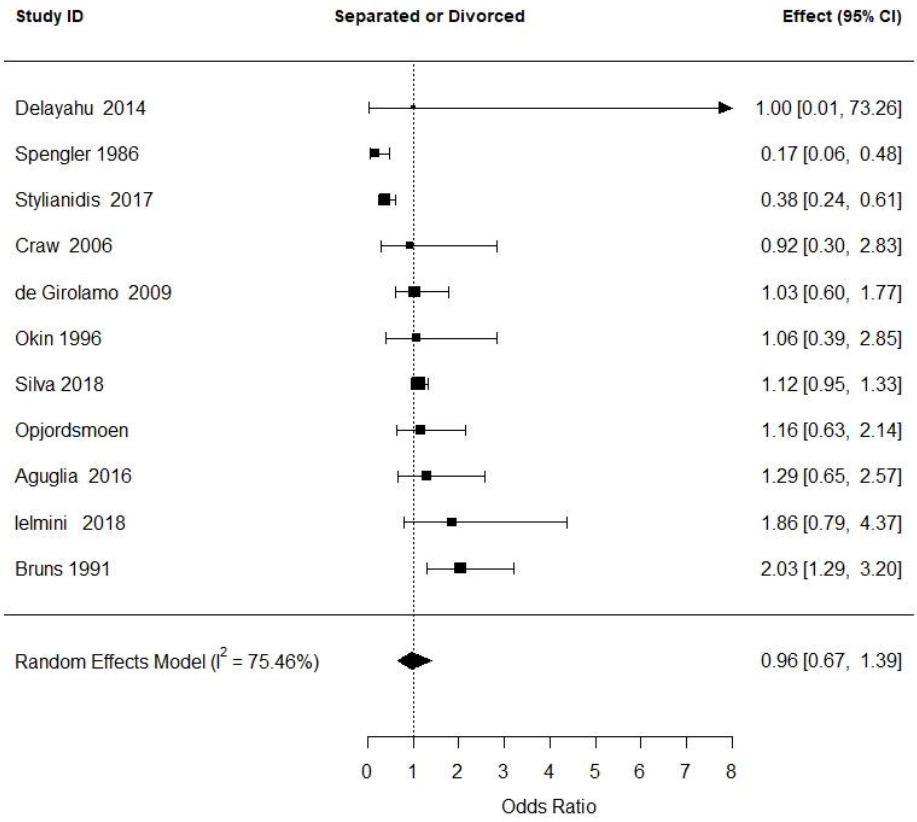


Figure 4.9 Relationship status

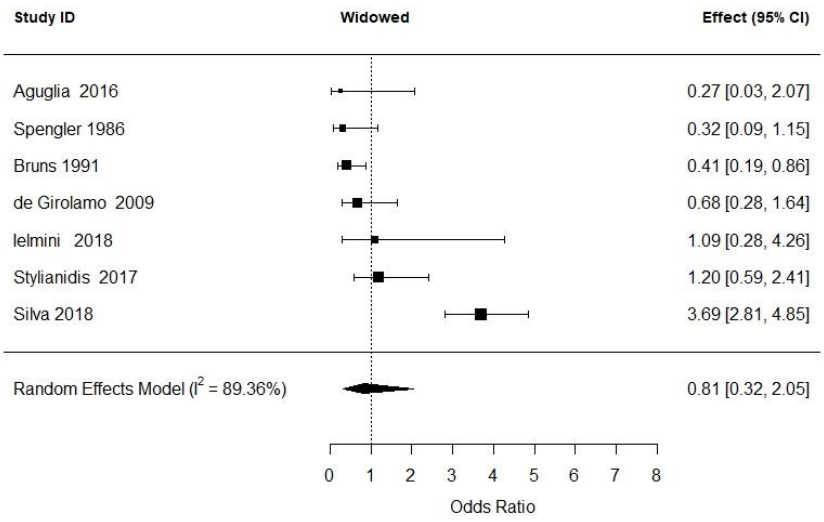
i) Single



ii)Separated/divorced



iii) Widowed



iv) Previously married

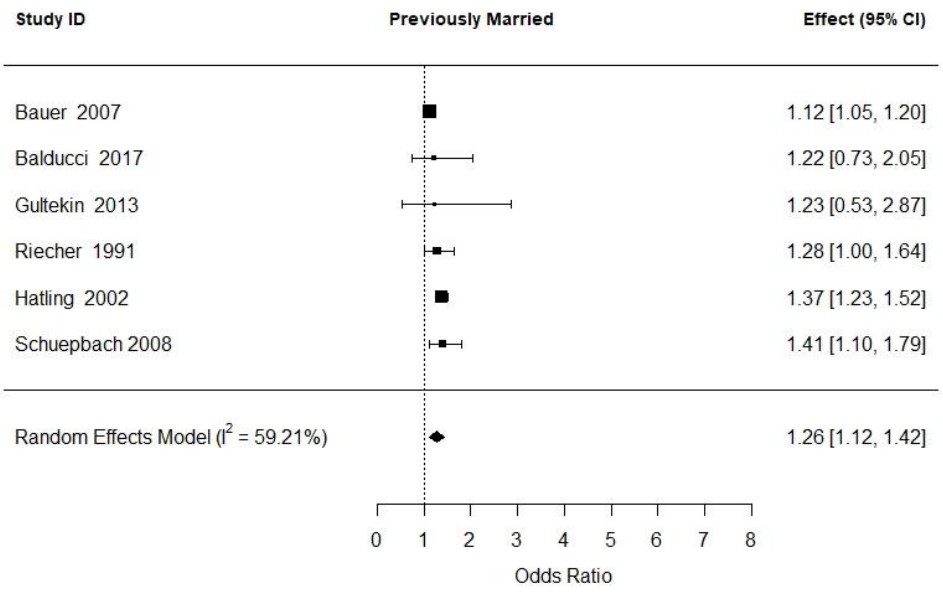


Figure 4.10 Previous involuntary admission

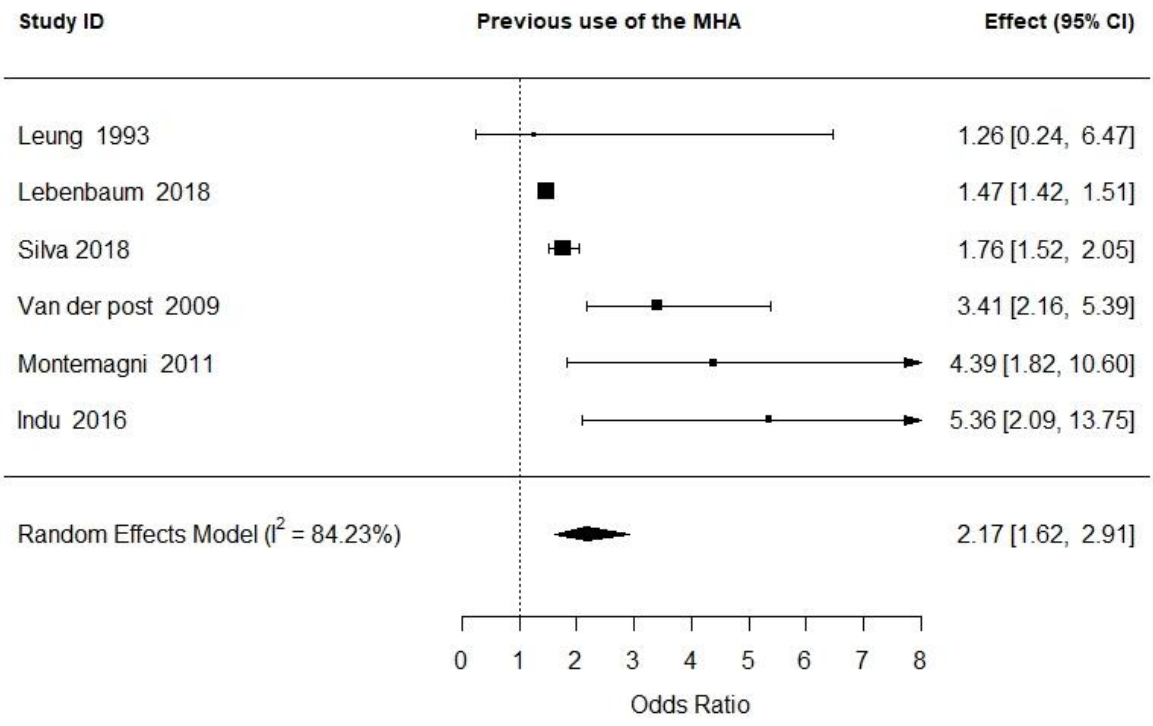
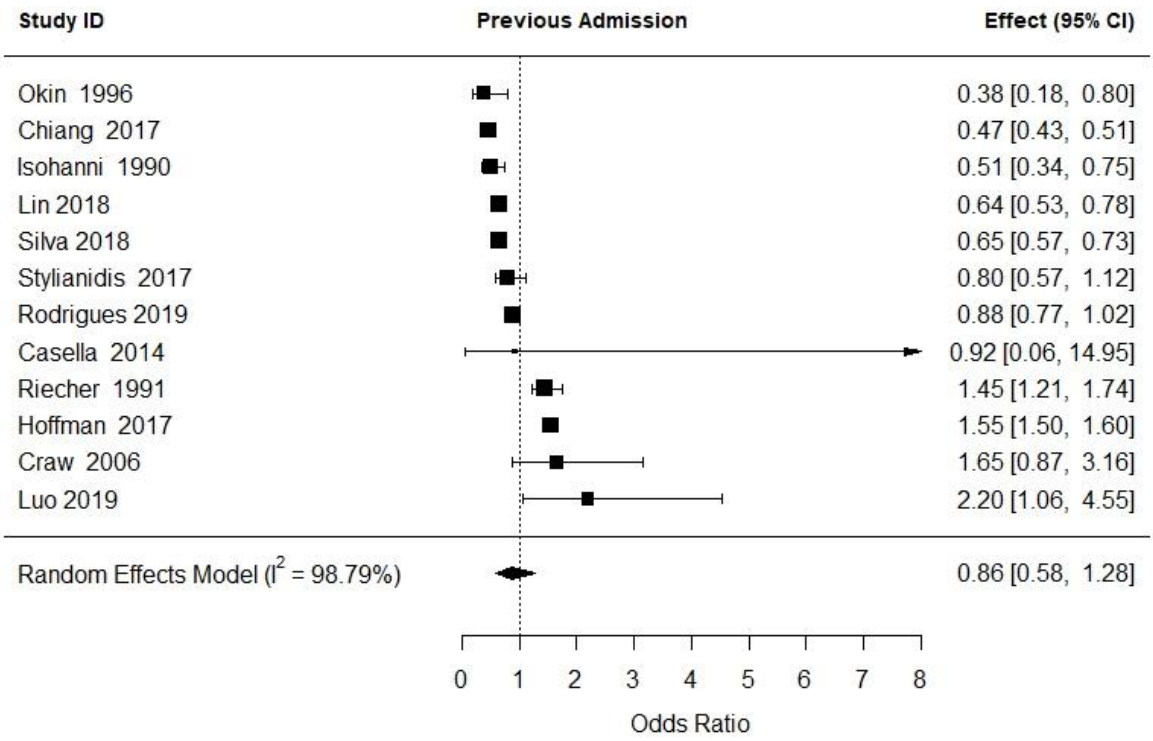


Figure 4.11 Previous admission (legal status not specified)



Gender. I found that men were slightly more likely than women to be hospitalised involuntarily rather than voluntarily (OR 1.23 95% CI 1.1 - 1.32; table 4.3) and this effect remained when restricted to high quality studies (OR 1.32 95% CI 1.16 - 1.51; table 4.4).

Employment. There was evidence of an association between involuntary psychiatric admission and being unemployed in both the full and high-quality analyses (OR 1.43 95% CI 1.07 - 1.90; table 4.3 and OR 1.46 95% CI 1.04, 2.05; table 4.4). Being on welfare benefits was associated with an increased risk of detention (OR 1.71 95% CI 1.28 - 2.27; table 4.3) but was only included in one high quality study.

Living situation. Involuntary psychiatric admission was associated with renting as opposed to owning one's home (OR 1.49 95% CI 1.04 – 2.15; table 4.3), though was only reported in three studies. Again, small numbers precluded meta-analysis of only high-quality studies.

Relationship status. Being single or previously married were both associated with involuntary rather than voluntary hospitalisation (OR 1.47 95% CI 1.18 -1.83, and OR 1.26 95% CI 1.12 – 1.42; respectively, table 4.3), though only the association with previous marriage remained in analysis of the high-quality studies (OR 1.12 95% CI 1.06 - 1.20; table 4.4).

Diagnosis. Those with a diagnosis of psychosis or bipolar affective disorder were significantly more likely to be hospitalised involuntarily than those with other mental health diagnoses (psychosis OR 2.18 95% CI 1.95 - 2.44; bipolar affective disorder OR 1.48 95% CI 1.24 - 1.76; table 4.3). In psychosis, this effect remained when the analysis was restricted to high quality studies (OR 2.19 95% CI 1.80 - 2.66; table 4.4) but did not remain significant in the three high quality studies that considered bipolar affective disorder (OR 1.06 95% CI 0.70 -1.60; table 4.4). In contrast, people with a diagnosis of depression, mood disorder (type not specified), anxiety, personality disorder or neuroses (used as a general category of non-psychotic illness) were more likely to be hospitalised voluntarily than involuntarily (table 4.3). This effect remained in the high-quality studies for all these diagnoses except anxiety (table 4.4).

Previous involuntary admission. Along with having a psychotic disorder, the factor that was most strongly associated with an involuntary psychiatric hospitalisation was having had a previous involuntary psychiatric hospitalisation (OR 2.17 95% CI 1.62 - 2.91; table 4.3). There were only two high quality studies that considered previous involuntary hospitalisation, but the association remained significant (OR 1.58 95% CI 1.32 - 1.90; table 4.4).

4.4.4 Meta-regression

Three post-hoc meta-regressions were conducted to explore potential associations between the predictor variables (mean age of the sample, proportion of women and publication year) and involuntary hospitalisation and to try to account for heterogeneity. Neither mean age of the sample, nor proportion of women in the study nor publication year predicted any significant associations with the seven meta-analysable variables: gender, diagnosis, housing status, employment, relationship status or previous admissions and involuntary hospitalisation. Please see tables 4.5 – 4.10 below.

Table 4.5: Moderators of Gender and Involuntary Psychiatric Detention

	Gender	**K**	**R^2**	**p-value**
Mean age	Male (vs female)	16	0.00%	0.5693
Percent Female	Male (vs female)	53	0.00%	0.9235
Publication date	Male (vs female)	53	0.00%	0.7875

K = no. of studies

Table 4.6: Moderators of Diagnosis and Involuntary Care

	Diagnosis	**K**	**R^2**	**p-value**
Mean age	Psychoses	13	0.00%	0.7075
Publication date	Psychosis	37	0.00%	0.6853
	Bipolar	14	0.00%	0.8629
	Depression	10	0.00%	0.7681
	Mood Disorder	20	0.00%	0.9286
	Anxiety	11	0.00%	0.9903
	Personality Disorder	26	0.00%	0.3499
	Substance misuse	23	15.03%	0.0857
	Organic Disorder	14	0.63%	0.3901
Percent Female	Psychosis	36	0.00%	0.68
	Bipolar	14	0.00%	0.7645
	Depression	10	0.00%	0.3547
	Mood Disorder	19	0.00%	0.4773
	Anxiety	11	0.00%	0.9255
	Personality Disorder	25	0.00%	0.6161
	Substance misuse	22	0.00%	0.8871
	Organic Disorder	14	0.07%	0.3113

Table 4.7: Moderators of Housing Status and Involuntary Care

	Housing status	**K**	**R^2**	**p-value**
Publication date	Living Alone	13	0.00%	0.2004

Table 4.8: Moderators of Employment and Involuntary care

	Employment status	**K**	**R^2**	**p-value**
Publication date	Unemployed	20	0.00%	0.4713
Percent Female	Unemployed	20	12.41%	0.0974

Table 4.9: Moderators of Relationship Status and Involuntary Care

	Relationship status	**K**	**R^2**	**p-value**
Mean age	Single	10	0.00%	0.3317
Publication date	Single	28	3.97%	0.4229
Percent Female	Single	28	0.00%	0.7607

Table 4.10: Moderators of Previous admission and Involuntary Psychiatric Detention

	Previous admission	**K**	**R^2**	**p-value**
Publication date	Previous Admission	12	0.00%	0.7459
Percent Female	Previous Admission	12	0.00%	0.3754

4.4.5 Narrative synthesis

Using published guidance on how to conduct narrative synthesis of data from systematic reviews,[204] I extracted information from all the studies included in the review on nine variables potentially associated with involuntary hospitalisation that had been either decided *a priori* through expert consensus or which were identified in the studies themselves, and which could not be included in the meta-analysis. These were psychiatric symptoms, insight, treatment adherence, risk to self and others, pathways to care, social support, alternative community treatment and area-level variation. I detail the findings for each of these areas below including the studies that found no associations or had findings which contradicted each other. I also include the Kmet quality score when referring to individual studies.

Psychiatric symptomology. Positive symptoms of psychosis were measured in ten moderate to highly rated studies using either the Brief Psychiatric Rating Scale (BPRS), Health of the Nation Outcome Scores (HoNOS) or the Positive and Negative Symptom Scale (PANSS),[34,151,160,166,171,176,182,187,205,206] and all but one of these studies[160] identified a statistically significant association between positive symptoms and involuntary rather than voluntary hospitalisation. By contrast, eight studies measured symptoms of mood or anxiety

disorders using the BPRS, HoNOS, PANSS or Hamilton Depression Scale (HAM-D),[148,151,166,182,187,194,195,206] and six of these identified a significant association with voluntary rather than involuntary psychiatric hospitalisation.[148,151,166,187,195,206]

Insight. Eight studies of moderate to high quality reported on levels of insight, and all found that lack of insight was strongly associated with involuntary hospitalisation.[152,160,172,180,191,194,195,205] However, only four studies reported how insight had been measured. In two studies the Insight and Treatment Attitudes Questionnaire (ITAQ) was used,[160,180] one study used the Scale for the Assessment of Unawareness of Mental Disorder,[205] and one used the PANSS in which there is one item labelled, 'lack of judgement and insight', rated on a 7-point Likert scale.[172] Two of the eight studies that reported on levels of insight found that lack of insight was the strongest predictor of involuntary hospitalisation.[180,191]

Adherence to treatment, Adherence to treatment and medication compliance prior to hospitalisation was investigated in eight low to moderate quality studies, and one high quality study. Six of these identified an association between poor treatment compliance and involuntary rather than voluntary hospitalisation,[169,191,194,195,198,201] and one of these found that lack of adherence to medication in the four weeks prior to admission was the most powerful predictor of an involuntary hospitalisation.[195] Two studies found no effect.[144,145]

Risk to self. The association between involuntary hospitalisation and risk to self was widely reported and is considered in 31 of the studies, though there was often a lack of clarity over whether the assessment of risk was based on previous self-harm/suicide attempts or expressions of suicidal ideation. Nine studies found that suicidal behaviour, ideation and history were associated with voluntary rather than involuntary hospitalisation.[34,137,138,153,174,186,188,190,192] Five studies found that risk to self was associated with involuntary admission,[176,179,181,191,207] while 17 studies found that there was no association between risk to self and the legal status of admission.[140,144,148,151,152,166,167,178,180,182,184,185,195,197,198,201,202]

Risk to others. All 18 of the studies that reported on risk to others found a positive association with involuntary hospitalisation.[34,140,144,151,153,166–168,174,176,179–181,185,187,191,197,201] However, there was a lack of consistency in how 'risk to others' was measured and defined through

these studies, with limited use of formal assessment scales. Three studies used the HONOS to record levels of aggression,[166,167,197] two studies used the Overt Aggression Scale,[34,180] two used the Risk of Harm to Others Scale,[176,191] one used the 'disturbing and aggressive behaviour' item of the Personal and Social Performance scale,[151] and another used a different item ('danger to others') from the same scale.[201] Four studies used information from patient notes,[140,153,181,186] but only one of these was clear about requiring a record of an actual incident of violent behaviour.[181] In one study,[185] risk to others was assessed through interviews with family members who were asked if there were any verbal threats to harm someone or aggressive outbursts in the week prior to admission. In the remaining four studies, it was unclear how the level of risk to others had been measured.

Pathways to care. There was a strong association between police involvement in admission and involuntary care in all nine studies that investigated this.[34,143,159,176,181,191,201,202,208] In contrast, involvement of a general practitioner/family doctor in the referral/admission process was associated with a significantly increased likelihood of voluntary rather than involuntary care in all four of the studies that measured this.[143,147,167,176]

Social support. The association between social support and involuntary hospitalisation was reported in seven studies.[144,147,148,168,169,191,199] These all measured social support in different ways, including patient report of perceived social support,[147,148,168,169,199] patient's social network feeling overwhelmed by the illness,[191] and the number of family visits the patient had whilst in hospital.[144] Five studies identified an association between limited social support and involuntary hospitalisation and two found no association. Only one study used a formal measure of social support: the Oslo social support scale and this found that higher levels of perceived social support were independently linked to a lower probability of involuntary hospitalisation.[199]

Availability of alternative treatments. Evidence on the association between the availability of inpatient beds and involuntary hospitalisation was limited and inconclusive.[3,162,166] Adequacy of community services and the rate of involuntary hospitalisation was investigated in four studies. One moderate quality German study identified reduced rates of involuntary care where community services provided more home visits.[134] One UK study found that availability of home visits after 10pm was associated with reduced use of hospitalisations under a section 2 of the Mental Health Act.[37] A high quality study from Belgum found that the availability of

alternative, less restrictive forms of care was the most crucial factor in determining whether to admit patients involuntarily and that alternative treatments were less likely to be available for foreigners, people without paid employment and those who were not living in a family.[179] However, a population-based high quality study found that mental healthcare trusts in England where community services were rated more highly by service users (and were ostensibly therefore better), had increased numbers of involuntary patients.[3]

Area-level deprivation. The relationship between area-level deprivation and involuntary psychiatric hospitalisation was only examined in four studies,[3,9,37,134] three of which were from the UK. In two studies,[3,9] the same dataset was used but different measures were implemented to assess deprivation. Findings from all three UK studies showed that the greater the level of local-area deprivation, the higher the rate of involuntary psychiatric hospitalisation.[3,9,37] The study from Germany, which compared clinics with high and low rates of involuntary hospitalisation, also found that the clinics with high rates of involuntary hospitalisation were in areas where there were significantly higher rates of unemployment, increased population density and less homogeneity of incomes.[134]

4.5 Discussion

4.5.1 Summary of findings

This review examines the clinical and social factors associated with involuntary care through systematic review of the international literature published in the last 25 years in adults aged over 18. Lack of consistency in the findings in previous studies had meant that there was uncertainty about which factors are associated with an increased risk of an involuntary rather than a voluntary hospitalisation. This study provides further clarity about the sociodemographic and clinical factors associated with involuntary hospitalisation as well as some estimates of these associations. Using meta-analysis, I identified that the factors most strongly associated with an involuntary hospitalisation were having a diagnosis of a psychotic disorder or a previous involuntary hospitalisation. People with these risk factors had more than double the odds than people without them of being hospitalised involuntarily rather than voluntarily. I also identified several sociodemographic and socioeconomic risk factors associated with involuntary hospitalisation: being male; single; unemployed; in receipt of welfare benefits; and not owning your own home. These findings should be interpreted

alongside those of the companion study, which identified that all of the minority groups studied had an increased risk of involuntary hospitalisation, but that Black Caribbean and Black African patients were at greatest risk and had more than double the odds of an involuntary hospitalisation than patients from white ethnic groups.[11]

Using narrative synthesis, I was able to examine further some of the features associated with an involuntary hospitalisation, though unfortunately not how these features interacted with each other or potentially influenced the other risk factors identified. On an individual level, positive symptoms of psychosis; perceived risk to others; clinician-rated lack of insight; reduced adherence to treatment prior to hospitalisation; a lack of social support; and police (as opposed to family doctor) involvement in the admission were all associated with involuntary hospitalisation. However, there was a lack of clarity about how some of these factors were assessed. Only three studies reported levels of insight based on a formal questionnaire; social support was formally measured in just one study; and assessment of risk was often unspecified. On a population level, there was a positive 'dose response' relationship between increased area-level deprivation and increased rates of involuntary hospitalisation, although this was only measured in three studies.

Further discussion on the findings occurs in the final discussion chapter, Chapter 10.

4.5.2 Limitations

This study has several limitations. Most of the included studies were from high income countries which is a major limitation and precluded exploration of the risk factors for involuntary care in low or lower-middle income countries where community mental health services are often very limited. However, despite this homogeneity, the countries represented in these studies represent a diverse range of legal and healthcare systems.[14] It is likely that this, along with the wide range of study methodologies, study settings, populations and time-periods studied have contributed to the high heterogeneity of results. My focus on published research only is a limitation since some countries may not have published research on involuntary hospitalisation. Future research would benefit from inclusion of a wider range of sources including qualitative work on clinical-decision making processes as well as service-user and carer experiences of inpatient psychiatric care and the pathways into it.[6] Although there is a high correlation between perceived coercion and legal status, a substantial number

of voluntarily admitted patients feel highly coerced, while some involuntarily admitted patients report little or no coercion.[187,209] Again this is something which should be explored further and risk factors for both perceived coercion and involuntary legal status should be identified in future work. Finally, results were limited by most studies reporting group level characteristics over individual data, preventing examination of the interplay of the various clinical, sociodemographic and economic factors risk factors and the mechanisms of their contribution to involuntary psychiatric detention.

4.6 Conclusion

This study updates current research on the associations between social and clinical factors and involuntary hospitalisation in adults.

I will now look at the factors associated with involuntary hospitalisation in children and young people. If a previous involuntary hospitalisation is associated with future involuntary hospitalisation as has been shown in this study, an involuntary hospitalisation in childhood/adolescence may increase the risk of further coercive care in adulthood, potentially establishing a cycle of healthcare inequalities and increased use of coercive treatment among certain groups. Understanding the factors associated with involuntary hospitalisation across the lifespan and whether these change over time, could help in the design of effective preventative interventions and a more equal mental health service. The next chapter describes a systematic review, meta-analysis and narrative synthesis of the social and clinical factors associated with involuntary care, specifically among children and adolescents.

Chapter 5: Clinical and sociodemographic factors associated with involuntary psychiatric hospitalisation among children and adolescents: A systematic review, meta-analysis and narrative synthesis

The contents of this chapter have contributed to the following outputs:

1. Publication in a peer-reviewed journal

Walker S, Barnett P, Srinivasan R, Abrol A, Johnson S. Clinical and social factors associated with involuntary psychiatric hospitalisation in children and adolescents: a systematic review, meta-analysis, and narrative synthesis. *The Lancet Child & Adolescent Health*. 2021 July 5(7): 501 – 512.[210]

2. Podcast

In conversation with… Susan Walker and Ramya Srinivasan: My colleague and I joined Jane Godsland, Editor of The Lancet Child and Adolescent Health to discuss our study on the clinical and social risk factors for involuntary psychiatric hospitalisation in children and adolescents.

https://www.buzzsprout.com/1135472/8412853-in-conversation-with-susan-walker-ramya-srinivasan.mp3

5.1 Chapter summary

Little is known about the factors associated with involuntary hospitalisation in children or adolescents. I completed a systematic review, meta-analysis and narrative synthesis to investigate the social and clinical factors associated with involuntary psychiatric hospitalisation among minors. MEDLINE, PsycINFO, Embase, and the Cochrane Controlled Clinical Register of Trials were searched for studies comparing the characteristics of voluntary and involuntary psychiatric inpatients under the age of 18. Results were synthesised using random effects meta-analysis on unadjusted data and narrative synthesis. 23 studies from ten countries were included. On meta-analysis, involuntary rather than voluntary hospitalisation of minors was associated with a diagnosis of psychosis (odds ratio 3.63, 95% CI 2.43–5.44, <p=0.0001), substance misuse (OR 1.87, CI 1.05–3.30, p=0.03) or intellectual disability (OR 3.33, CI 1.33–8.34, p=0.01), as well as presenting as a perceived risk to self or others (OR 2.05, CI 1.14 - 3.64, p=0.015; OR 2.37, CI 1.39 – 4.03, p=0.0015, respectively). Involuntary

hospitalisation was also found to be associated with being older than 12 (OR 3.57, CI 1.46 – 8.73, p=0.01) and being from a Black rather than a White ethnic group (OR 2.72, CI 1.88 – 3.95, <p=0.0001). Using narrative synthesis, I found that illness severity and poorer global functioning was associated with an involuntary hospitalisation. Over-representation of involuntary hospitalisation in certain groups may begin in childhood, potentially establishing a cycle of inequality that continues into adulthood.

5.2 Introduction

Despite international momentum to reduce compulsory psychiatric treatment, there is very little research or data on the use of compulsory psychiatric treatment in children and adolescents under the age of 18. There is also evidence to suggest that the use of involuntary psychiatric hospitalisation among minors is increasing in some countries, including the UK and Finland.[57,58,62] The systematic review and meta-analysis presented in chapter 4 found that a previous involuntary hospitalisation was one of the main risk factors for a future involuntary hospitalisation among adults. Therefore, reducing compulsory psychiatric hospitalisations in childhood and adolescence may help to reduce the recurrent use of involuntary psychiatric treatment across the lifespan and prevent the establishment of potentially lifelong negative mental health treatment trajectories.

Understanding which young people are most at risk of experiencing involuntary hospitalisation is an essential first stage in clarifying where interventions should be targeted to help reduce the need for compulsory hospitalisation. The social and clinical factors associated with involuntary hospitalisation among individuals younger than 18 years has received little academic, clinical, or political attention to date. In addition, while it has been consistently shown that adults from minority ethnic groups are more likely to be subject to an involuntary hospitalisation than those from majority groups,[11] this is not something which has been fully investigated among children and adolescents. It is important that we understand whether young people are experiencing the same racial inequalities in access to mental health care as adults, and if so, attempts made to address this at the earliest possible stage. A greater understanding of whether children and adolescents from minority groups experience more involuntary hospitalisation than those from majority groups may also help in the identification of the likely multi-layered factors responsible for this longstanding and still largely unexplained racial inequality.

I have not found any previous international systematic review or meta-analysis of the factors associated with involuntary psychiatric hospitalisation among people under 18. Like the adult study presented in the previous chapter, this study aims to assess the international evidence on the associations between social and clinical factors and the involuntary hospitalisation of children and adolescents, and to provide some estimates of these associations.

5.3 Methods

This review was prospectively registered on PROSPERO (CRD42020099892) and adhered to the PRISMA guidelines.[211]

5.3.1 *Selection criteria*

Quantitative studies published in peer-reviewed journals that recorded sociodemographic or clinical information about patients who were already in hospital or were admitted to hospital both voluntarily and involuntarily were included. Studies which did not directly compare involuntary and voluntary patients, such as population comparisons, were not included in this review in order to minimise the between study heterogeneity. This is discussed further in the limitations section. The primary outcome of interest was involuntary psychiatric hospitalisation under mental health law, and patients hospitalised voluntarily were comparison groups. Studies which only included inpatients who had committed crimes (forensic patients) were also excluded as forensic and non-forensic patients can have very different routes to admission, are admitted to different hospitals, with different follow up arrangements. In line with the NHS long-term plan that youth mental health services should cover the ages 0-25, study samples which included people aged up to 25, were included if the mean age of the sample was 18 or under. Given the lack of research in the field, all types of studies were considered, including cross-sectional and cohort studies. Studies were also included in the narrative synthesis if they met the inclusion criteria but did not contain data that could be used in meta-analysis.

5.3.2 *Search strategy*

The search strategy was developed in consultation with an information scientist with experience in mental health research and was adapted from the search strategy used in the systematic review presented in the previous chapter. The following databases were searched

using keyword and subject headings from inception to 31 August 2019. The search was updated on 22 July 2020.

- MEDLINE
- PsycINFO
- Embase
- The Cochrane Controlled Clinical Register of Trials

There were no date or language restrictions. The search strategy was supplemented with a backwards reference search of included studies and any relevant reviews, and a forward citation search using Scopus. The full search strategy for Medline is presented in Table 5.1. The search strategies for the other databases are in Appendix B.

Table 5.1: Full search terms for Medline

#	**Search terms with results**
1.	exp Mental Health Services/
2.	exp Emergency Services, Psychiatric/
3.	Hospitals, psychiatric/ or Psychiatry Department, Hospital.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
4.	(psychiatr* adj3 (admission* or admitt* or readmi* or re-admi* or hospitali* or in-patients or inpatients)).ti,ab,kf.
5.	Mentally Ill Persons.mp. or exp Mentally Ill Persons/
6.	mental health/ or mental disorders/
7.	((mental or psychiatr*) adj (health or disorder* or disease* or deficien* or illness* or problem*)).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
8.	or/1-7
9.	"Commitment of Mentally Ill".mp. or exp "Commitment of Mentally Ill"/

10.	Involuntary Treatment.mp. or exp Involuntary Treatment/
11.	commitment.ti.
12.	((psychiatr* or mental* or psychos* or schizo*) adj3 commit*).ti,ab,kf.
13.	((commitment or restriction or court) adj2 order?).ti,ab,kf.
14.	((mental health adj (act? or jurisdiction or law? or legal* or legislat*)) and (admission* or admitt* or readmi* or re-admi* or hospitali* or in-patients or inpatients or commit* or detain* or detention* or section* or treat* or care)).mp.
15.	((compulsory or forced or involunt* or in-volunt* or mandat*) adj3 (admission* or admitt* or readmi* or re-admi* or hospitali* or in-patients or inpatients or commit* or detain* or detention* or section* or treat* or care)).ti,ab,kf.
16.	or/9-15
17.	child*.mp. or exp CHILD/
18.	exp Adolescent/ or adolescen*.mp.
19.	teen*.mp.
20.	exp Infant/ or infan*.mp. or exp Child, Preschool/
21.	or/17-20
22.	8 and 16 and 21

*Note: adj denotes searching for adjacent terms, exp denotes exploding a subject heading, ti denotes searching for a key word in the title, ab denotes searching for a key word in the abstract, id denotes searching for a key word in the article identifier, mp denotes searching title, abstract, original title, name of substance word, subject heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, * denotes truncation.*

I identified studies that met inclusion criteria through systematic screening of all titles and abstracts, then the full text. In line with the methodology from previous studies in this field, at each stage, a random 10% check was done with a colleague, Dr Ramya Srinivasan. Given the low numbers involved, it was not possible to calculate inter-rater reliability scores however, there was almost full agreement on which studies to include and exclude, with only one study being identified by one of us for inclusion and not the other.[212] On discussion, it was decided that this study did meet the inclusion criteria and was included in the review.

5.3.4 *Data extraction*

I extracted data using a Microsoft Excel-based broad extraction sheet, which included study design, sample size, country, diagnosis, age, gender, ethnicity, where and with whom the young people were living, previous abuse, socioeconomic status, educational level, risk to self and others, pathways to care including prior contact with services and the primary outcome measures: the number of young people admitted voluntarily and involuntarily. These factors had been identified in advance through a scoping review, expert consultation, and the findings from my previous review presented in Chapter 4, but I also extracted data on any other factors associated with involuntary hospitalisation that were identified in the individual studies.

5.3.5 *Quality assessment*

I assessed the quality of included studies using the KMET 14-item checklist, a tool suitable for use with a range of study designs and described in more detail in the previous chapter.[213] Every study was assessed against each item using a 3-point scale, with a score of 2 showing that criteria were fully met, 1 denoting that criteria were partly met, and 0 representing that criteria were not met. A linear summary score (total sum divided by total possible sum) from 0 to 100 was calculated and each study was then categorised as low (≤49), moderate (50–74), or high (≥75) quality. As described above, a random 10% of the quality assessments were independently checked by two reviewers and there were no discrepancies between reviewers in the final summary scores.

5.3.6 *Data analysis*

I used the metafor package in the statistical program R[130] to conduct the meta-analysis. This was also used for my previous systematic review and meta-analysis (chapter 4) and the companion paper to that study.[11] It is a flexible package which enables the calculation of various effect sizes and outcome measures as well as forest plots and funnel plots. Also, the code can be shared and reviewed by others, which facilitates transparency and the reproduction of analysis. It was used to calculate random effects summary estimates (ORs and 95% CIs) for the association between the nine meta-analysable variables (gender, diagnosis, ethnicity, living arrangements, risk to self, risk to others, previous abuse, previous psychiatric hospitalisation, and age) and involuntary hospitalisation. Only unadjusted data were included in the meta-analyses.

Post-hoc meta-regressions to assess possible causes of heterogeneity were conducted, but in line with Cochrane Handbook guidance, only if there were ten or more studies for each variable.[214]

I calculated heterogeneity between studies using I^2. A value of 0% indicates no observed heterogeneity, 25% low heterogeneity, 50% moderate heterogeneity, and 75% high heterogeneity.[215]

The narrative synthesis was done following guidance for systematic reviews.[216] I identified factors in the broad extraction sheet that were not suitable for a meta-analytic approach because they were not reported consistently enough or did not include enough or appropriate data to input into the meta-analysis. These factors were psychiatric symptomatology, associations between gender and diagnosis, previous outpatient treatment, education level and socioeconomic status. In order to synthesise all of these factors, I tabulated the data by study and included a textual description of the identified factors, and whether the direction of the association with involuntary hospitalisation was positive or negative. I then regrouped data by factor of interest to investigate how each factor was associated with involuntary care across all studies.

Publication bias was assessed by visual examination of the symmetry of the funnel plots.[132,133]

5.4 Results

The initial search identified 3358 studies of which 555 were identified as duplicates, resulting in 2803 studies to be screened. After screening of title and abstract, a total of 101 potentially relevant full text articles were identified of which 22 met inclusion criteria. The update search identified one additional study meeting inclusion criteria (See Figure 5.1). No further studies were identified on the forward or backward searches.

The key characteristics of the 23 included studies are shown in Table 5.2. The studies were all from high-income countries, with 17 from seven European countries (Finland, Germany, UK, Netherlands, Switzerland, Belgium and Sweden) two from both the USA and Canada and one from both New Zealand and Israel. In all but one study, the maximum age of the participants was 18.[217] In total, 41,271 young inpatients were represented in the study, of whom 9753 (23.6%) were hospitalised involuntarily. Most studies (K=19) were retrospective cohort

studies, which relied on routinely collected data from hospital or national databases, and samples in all studies were representative of the population of patients admitted.

11 studies were rated as moderate quality, seven were rated high quality, and five were rated low quality. There was considerable variability between the studies but one of the main areas of weakness was in the data analysis, with only seven studies controlling for potential confounders. It was unusual for studies to report on how the sample size had been chosen and some of the smaller studies may be underpowered. Scores for each study are available in the Appendix B.

All studies were included in the narrative synthesis, and all but four studies[218–221] were included in the meta-analysis (included participants N=31,212). These four studies were excluded from the meta-analysis as the exact number of voluntary and/or involuntary patients was not clearly stated and the data could not, therefore, be entered into the meta-analysis. The full meta-analysis results are presented in Table 5.3. Forest plots are presented in Figures 5.2-5.10.

Most studies described patients as either voluntary or involuntary/compulsory, without giving more details of the legal basis for the hospitalisation. For example, few mention the role of parental consent. However, one study from the UK specifies that the voluntary patients were admitted under parental consent, and the involuntary patients were admitted under section 3 of the MHA.[89] Another study from the UK, identifies the involuntary patients as those under section 2 or 3 of the MHA.[222] The other UK studies report that those under the MHA are involuntary, while those not admitted under the MHA are voluntary. The study from Germany reports that the voluntary patients can be admitted under parental as well as the child/adolescent's own consent while involuntary placements have to be mandated by a judge.[60] However, the study does not give any further data, for example, it does not state how many of the voluntary patients in their sample are admitted under parental consent and how many were admitted based on their own consent. The studies from Sweden and the Netherlands both report that patients under 12 could be admitted 'voluntarily' under parental consent, but those older than 12 who did not agree to a voluntary admission, would be admitted under mental health legislation.[223,224] Neither study distinguishes between the patients admitted voluntarily under parental consent, or voluntarily under their own consent.

Figure 5.1: PRISMA Flow chart of study selection

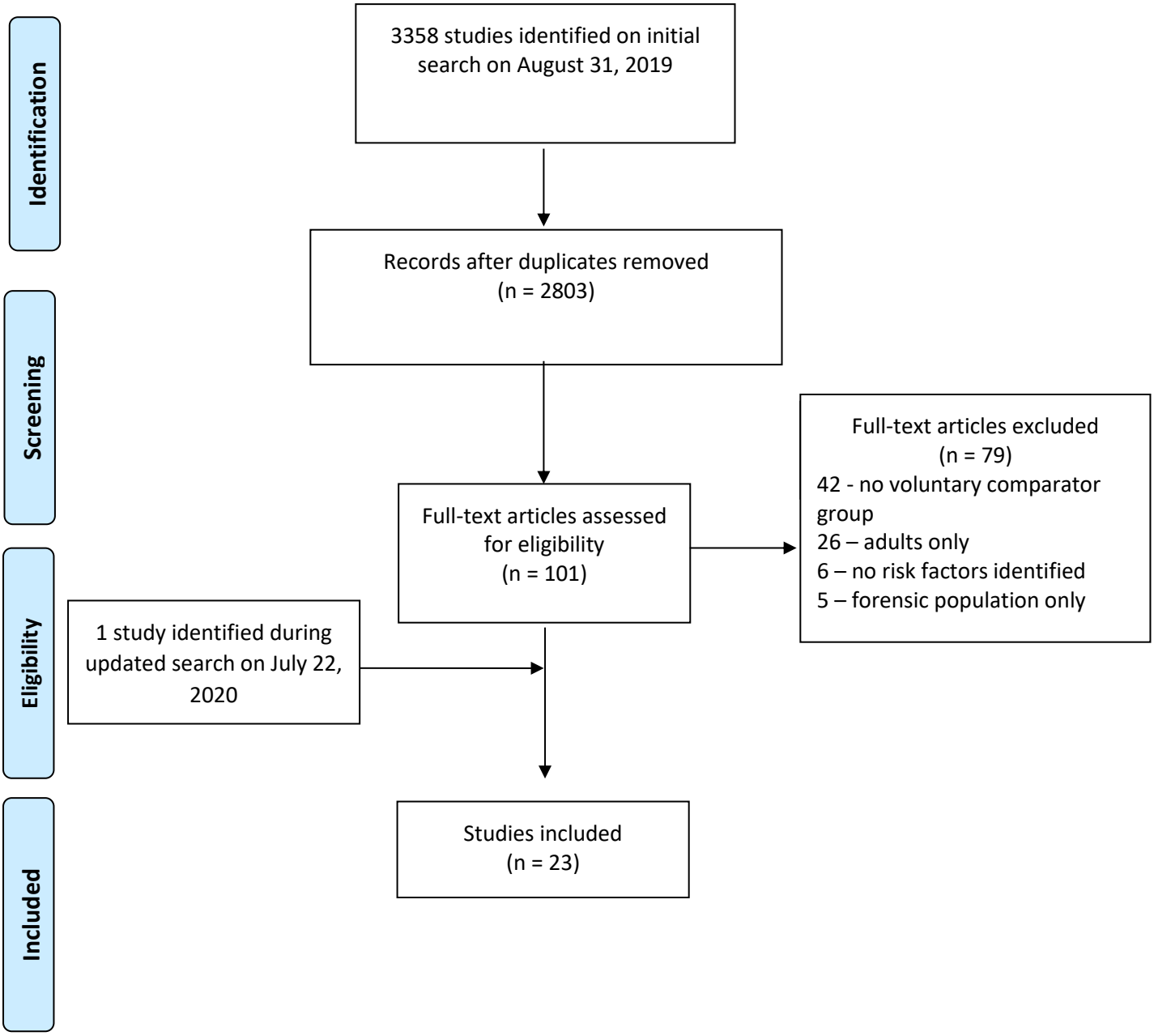


Table 5.2: Characteristics of included studies

Author and year	Setting	Sample size	Age range	Sample description	No. of involuntary patients	Quality
Ayton 2009[225]	England	50	14 -17	All young people admitted to a specialist eating disorder unit between 2003 and 2006. Voluntary patients were admitted under parental consent.	16 (32%)	M
Chaplin 2015[226]	England	151	6-17	Analysis of routinely collected data from 14 general adolescent and specialist intellectual disability inpatient units as part of a larger quality improvement project.	26 (17%)	M
Corrigall 2013[227]	England	435	12-17	All admissions to an adolescent inpatient unit between 1/1/01 and 31/12/10.	156 (36%)	M
Ellila 2008[228]	Finland	278	12-17	Point prevalence study on 1/1/00 of inpatients from 64 psychiatric wards in 18 hospital districts.	82 (29.5%)	H
Jaworowski 1995[221]	Israel	78	15-17	Hospital records of children and adolescents admitted to a hospital in the south of Israel between 1/4/91 and 1/12/92.	14 (18%)	L
Jendreyschak 2013[229]	Germany	10547	1-17	Retrospective analysis of hospital admission registers from three major child and adolescent psychiatry hospitals between 2004 and 2009.	3081 (29.2%)	H
Kaltiala-Heino 2004[230]	Finland	15858	<12-17	Retrospective study of a nationally representative discharge register between 1996 and 2000.	2544 (16.1%)	H
Kaltiala-Heino 2010[231]	Finland	187	11-17	Retrospective database review of admissions to the adolescent psychiatry wards of Tampere University Hospital 2004-2006.	42 (22.5%)	H

Khenissi 2004[218]	Finland	106	13-18	Retrospective review of every third patient referred involuntarily for inpatient psychiatric hospitalisation in the Unit of Adolescent Psychiatry of Turku University Hospital in 1994-2002.	39 (34%)	M
Kilgus 1995[232]	USA	352	12-18 (M 15.4)	All adolescent admissions to a state hospital in South Carolina in 1988.	275 (78%)	M
Laget 2002[233]	Switzerland	66	13-18	Retrospective review of all inpatients in an adolescent hospital unit in Lausanne in 1998-1999.	16 (24.2%)	L
Lindsey 2010[217]	USA	383	12-22 (M<16.4)	Retrospective patient record review of African-American youth admitted to hospital after presenting to a psychiatric emergency services centre between October 2001 and September 2002.	300 (78%)	H
Mears 2003[234]	England and Wales	663	M in invol group=17, M in vol group=15. Age range not given.	Census of inpatients in 71 child and adolescent inpatient units in England and Wales on 19/10/99.	127 (19%)	L
Mertens 2017[235]	Belgium	24	13-17	Adolescent patients referred to an inpatient unit between 1/9/13 to 28/2/15.	12 (50%)	L
Ottisova 2018[219]	England	10	5-17	Trafficked children identified from electronic health records who had been admitted to psychiatric hospital within South London and the Maudsley NHS Trust as an inpatient between 1/1/06 and 21/11/14.	4 (40%)	H
Park 2011[236]	New Zealand	332	12-17	Retrospective review of consecutive admissions to the general psychiatric inpatient ward in Hamilton from Jan 2002 to Dec 2007.	204 (61.4%)	M
Persi 2016[237]	Canada	225	5-17	Retrospective chart review of all discharges between 1/4/07 and 31/3/08 from a child and adolescent	180 (80%)	M

				inpatient setting serving 26 acute care hospitals.		
Ramel 2015[238]	Sweden	261	12-17	Retrospective review of all admissions to a child and adolescent psychiatry emergency unit in Malmo in 2011.	28 (10.7%)	M
Siponen 2007[239]	Finland	9865	12-17	Retrospective register study of all adolescents admitted to Finnish psychiatry hospitals from 1996 to 2003.	2333 (23.6%)	M
So 2019[240]	Netherlands	227	6 - 18	Registry data used to identify all psychiatric hospital admissions of minors following a referral to a mobile psychiatric emergency service in 2 areas of the Netherlands between 2008 and 2017.	90 (7.5%)	H
Sourander 1998[241]	Finland	1014	12 - 17	National register of hospital discharges was used to identify all patients aged 12 to 17 discharged from child, adolescent or adult psychiatric hospitals in 1990 and 1993.	127 (12.5%)	M
Stein 1988[242]	Canada	46	Mean age of invol group at admission=16.7, mean age of vol group=16.3. Age range not given.	Retrospective chart review, with follow up, of all patients discharged from the Sunnybrook Adolescent Unit between 1977 and 1984. All of the involuntarily admitted patients (n=25) and the next patient admitted voluntarily were followed up approximately 5 years later. Final sample included 23 of the invol group and 23 of the vol group.	23 (control group)	L
Tolmac 2004[243]	England	113	13 - 17	Cross-sectional survey of adolescents with a home address in the Greater London area who were inpatients in psychiatric units on 14/2/01.	34 (30%)	M

L = low, M = moderate, H = high quality

Note: Control groups are patients hospitalised voluntarily vs those in hospital involuntarily within the same cohort, unless otherwise stated.

Table 5.3: Results of meta-analysis

	No of studies	OR	95% CI	P value	I^2
Intellectual disability					
Intellectual disability (vs no intellectual disability)	4	3.33	1.33 – 8.34	0.01*	65.63%
Primary Diagnosis					
Psychosis (vs no psychosis)	8	3.63	2.43 – 5.44	<0.0001*	90.5%
Substance misuse (vs no substance misuse)	5	1.87	1.05 – 3.30	0.03*	84.9%
Behavioural Disorder (vs no behavioural disorder)	6	0.71	0.50 – 0.84	0.0012*	85.5%
Anxiety Disorder (vs no anxiety disorder)	2	0.19	0.05 – 0.81	0.03*	0.0%
Eating disorder (vs no eating disorder)	2	0.59	0.03 – 11.867	0.73	74.72%
Mood Disorder (vs no mood disorder)	6	1.02	0.85 – 1.22	0.84	66.7%
Personality disorder (vs no personality disorder)	3	1.89	0.35 –9.93	0.45	92.3%
Developmental Disorder	3	0.96	0.49-1.87	0.91	0.0%
Risk					
Harm to self (vs no harm to self)	8	2.05	1.15 - 3.64	0.015*	77.7%
Harm to others (vs no harm to others)	5	2.37	1.39 – 4.03	0.0015*	62.9%
Previous admission					
Previous admission (vs no previous admission)	3	2.18	0.95 – 5.60	0.10	77.8%
Gender (ref Male)					

Female	12	0.78	0.55 -1.11	0.17	80.4%
Ethnicity (ref White)					
Black	3	2.72	1.88 – 3.95	<0.0001*	0.0%
Asian	2	1.12	0.32– 3.84	0.86	8.1%
Other	2	1.21	0.18 – 8.04	0.85	62.1%
Age					
Older adolescence (vs early)	2	2.82	1.04 – 7.63	0.04*	83.7%
Over 12 (vs under 12)	3	3.57	1.46 – 8.73	0.01*	90.4%
Living Arrangements					
Living with family (vs not living with family)	4	0.40	0.09 – 1.76	0.23	74.9%
Previous Abuse (ref None)					
Any	2	1.07	0.62 – 1.85	0.80	0.0%
Sexual	3	2.26	0.88 – 5.82	0.09	51.3%
Physical	2	1.85	0.51 – 6.76	0.35	72.9%

***p=<0.05**

5.4.1 *Meta-analysis*

- *Clinical factors*

The meta-analysis found that a diagnosis of intellectual disability was associated with an involuntary rather than voluntary hospitalisation (K=4, OR 3.33, 95% CI 1.33 – 8.34, p=0.01). Intellectual disability is not traditionally classed as a psychiatric disorder (due to its early onset and pervasive nature). In the International Classification of Disorders (ICD) and the Diagnostic and Statistical Manual of Mental Disorders (DSM) multiaxial systems (used before DSM-5), it is treated as a developmental disorder (Axis II) rather than a psychiatric disorder (Axis I). In addition, the UK Mental Health Act code of practice states that "a person must not be considered to be suffering from a mental disorder solely because they have a learning disability".[115] As such, I included all young people with a diagnosis of intellectual disability in the meta-analysis, whether this was described as the main diagnosis or a comorbid one. All of the other diagnostic categories are based on the main or primary diagnosis only, with

studies excluded from the diagnosis meta-analysis if they did not identify a main or primary diagnosis. Intellectual disability was only clearly defined in one study, as intelligence quotient of less than 80,[225] and was given in addition to the primary diagnosis in all but one study.[229]

Involuntary rather than voluntary hospitalisation was also higher for young people with a diagnosis of psychosis than for those without psychosis (K=8, OR 3.63, 95% CI 2.43 – 5.44, <p=0.0001). Young people with a primary (not comorbid) diagnosis of substance misuse were also more likely to be hospitalised involuntarily than voluntarily (K=5, OR 1.87, 95% CI 1.05 – 3.30, p=0.03). A diagnosis of behavioural problems (which included diagnoses such as ADHD and conduct disorder) or a diagnosis of anxiety disorder were associated with *voluntary* rather than involuntary hospitalisation (K=6, OR=0.71, 95% CI 0.50 – 0.84, P=0.0012; K=2, OR=0.19, 95% CI 0.05-0.81, p=0.03; respectively).

Young people perceived to be a risk of harm to themselves (this included self-harm, suicidal ideation and suicide attempts) or risk to others (this included aggression, violent acts and danger to others) had double the odds of an involuntary over voluntary hospitalisation than those not thought to present a risk (K=8, OR 2.05, 95% CI 1.14-3.64, p=0.015; K=5, OR 2.37 95% CI 1.39-4.03, p=0.0015; respectively). Having had a previous hospital admission was not associated with involuntary hospitalisation among children and adolescents, although this is based on just three studies (K=3, OR=2.18, 95% CI 0.85-5.60, p=0.10).

With the exception of anxiety and developmental disorders, there is substantial heterogeneity identified for all of the clinical factors included in the meta-analysis. As there are no clear outliers in terms of data, it is likely that this heterogeneity is due to the variety of methods used to make clinical decisions about diagnosis and risk, as well as characteristics of different health and legal systems. In addition, most of these variables are based on a very small number of studies.

- *Socio-demographic factors*

I did not identify any association between gender and involuntary hospitalisation (K=12, OR= 0.78, 95% CI 0.55-1.11, p=0.17), though again the heterogeneity is very high (80.4%).

Few studies considered ethnicity and categorisation was often crude where it was included, with a lack of clarity as to whether ethnicity had been self-reported. The crude categorisation

meant that I was limited in the meta-analysis to the use of four non-homogenous ethnic groupings: Black, White, Asian and Other. Whilst clearly inadequate to categorise ethnicity in this way (this is discussed further in chapter 7), given the racial inequalities in the use of involuntary hospitalisation among adults it seemed important to include this data in the analysis, whilst highlighting its inadequacies. Despite the small amount of data, the odds of involuntary rather than voluntary hospitalisation among children and young people from Black ethnic groups (including Black British, Black Caribbean, Black African, African American, Black Other) were almost three times higher than those for young people from White ethnic groups (White British, White Irish, White Other) (K=3, OR 2.72, 95% CI 1.88 – 3.95, p=<0.0001). Among young people from Asian (Indian, Pakistani, Bangladeshi, Asian, Other) and 'other' (other ethnic groups and mixed ethnic origin) groups, there was no significant difference in the risk of involuntary over voluntary hospitalisation compared to young people from White groups, although results for both of these groups were based on only two papers (K=2, OR=1.12, p=0.86; K=2, OR=1.21, p=0.85; respectively). For the Black and Asian vs. White groups, the statistical heterogeneity was very low (0.0% and 8.2% respectively).

Four studies (three from the UK and one from the US) examined the association between ethnicity and involuntary hospitalisation further. In their UK based historical cohort study, Corrigall and Bhugra found that differences in the use of the MHA according to ethnicity only occurred in those with psychosis. Young people from Black and Other groups with psychosis were more likely to be detained under the MHA at any point in their admission than those with psychosis in the White group (OR 3.0 and 3.1 respectively). In the non-psychosis group, there were no significant differences in use of the MHA.[227] Kilgus et al. found that over one year in a state hospital facility in South Carolina, African American youth were twice as likely to be involuntarily hospitalised at the time of admission than White Americans (OR 2.051, p=0.043), controlling for both gender and diagnosis.[232] In a UK cross-sectional study, Tolmac and Hodes found that young people from Black groups were significantly more likely to be subject to the MHA than young people from White groups on admission. However, when looking at the use of the MHA at any point in the hospitalisation, there was no significant difference between the ethnic groups.[243]

Older adolescents (16-17 years old) were more likely to be subject to an involuntary hospitalisation than those aged 12-15 (K=2, OR 2.82, 95% CI 1.0 –7.63, p=0.04). In addition,

young people aged over 12 were much more likely to have an involuntary rather than voluntary admission when compared to those under 12 (K=3, OR 3.57, CI 1.46–8.73, p=0.01).

I found no evidence of an association between involuntary hospitalisation and whether a young person was living with their parents/family at the time of admission (K=4, OR 0.4, 95% CI 0.09–0.76, p=0.23), although none of the four relevant studies clearly specified the living arrangements of those not living with family, so this may have included those living with friends, in an institution, or in foster care. Having a previous history of any abuse (K=2, OR 1.07, 95% CI 0.62–1.85, p=0.80) or physical abuse (K=2, OR 1.85, 95% CI 0.51 – 6.76, P=0.35), was not associated with involuntary hospitalisation; however there was weak evidence of an association between a history of sexual abuse and involuntary hospitalisation (K=3, OR 2.26, 95% CI 0.88 – 5.82, p=0.09). Although this data was not suitable for the meta-analysis, Ottisova et al. found, contrary to their hypothesis, that young victims of trafficking (74% of whom had been subject to physical or sexual violence) were no more likely to be involuntarily rather than voluntarily admitted for psychiatric inpatient care than those who had not been trafficked, despite the high rate of self-harm (33%) and suicide attempts (27%) identified in the trafficked group.[219]

Forest Plots

Figure 5.2: Diagnosis

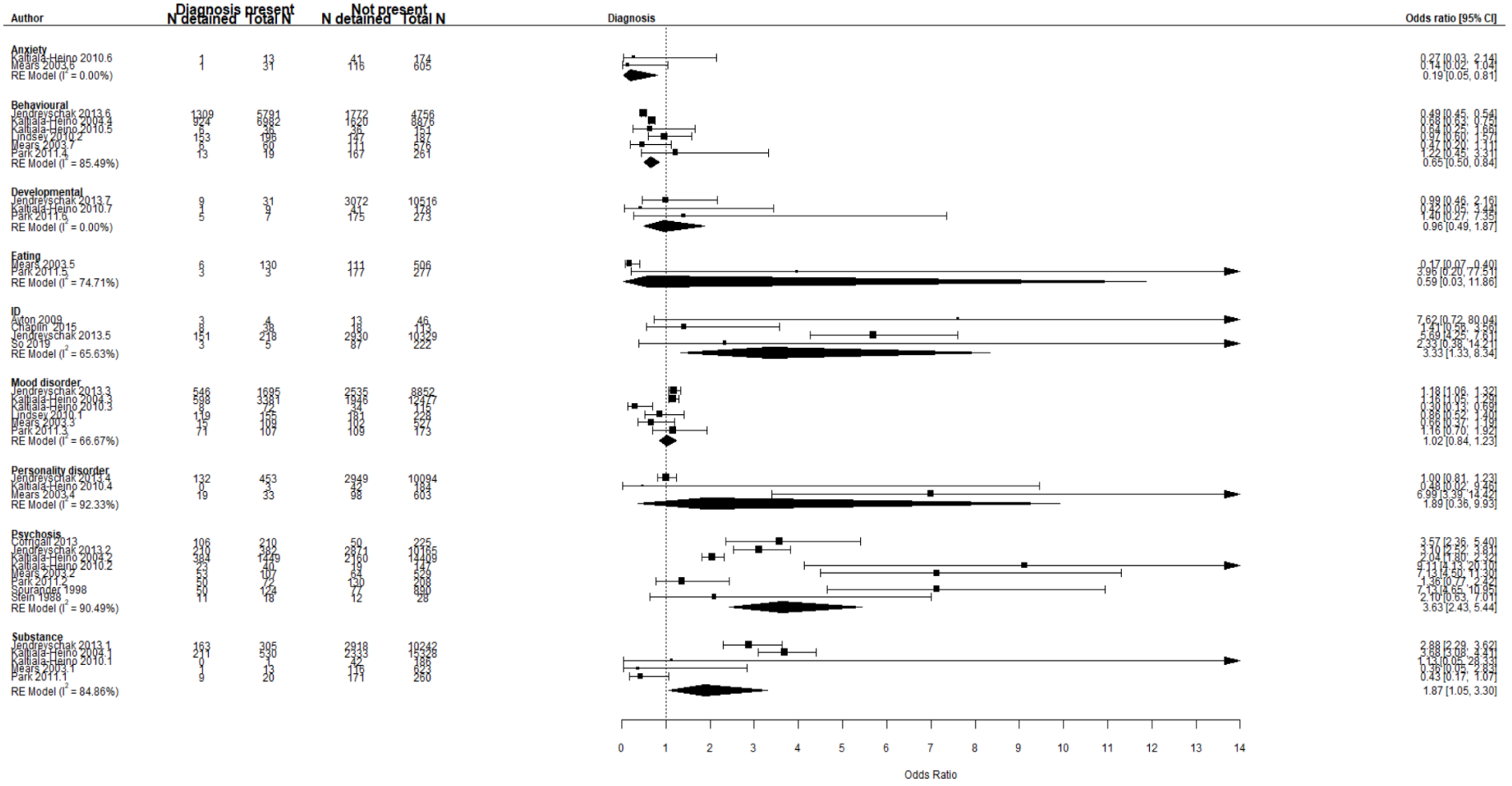


Figure 5.3: Risk to others

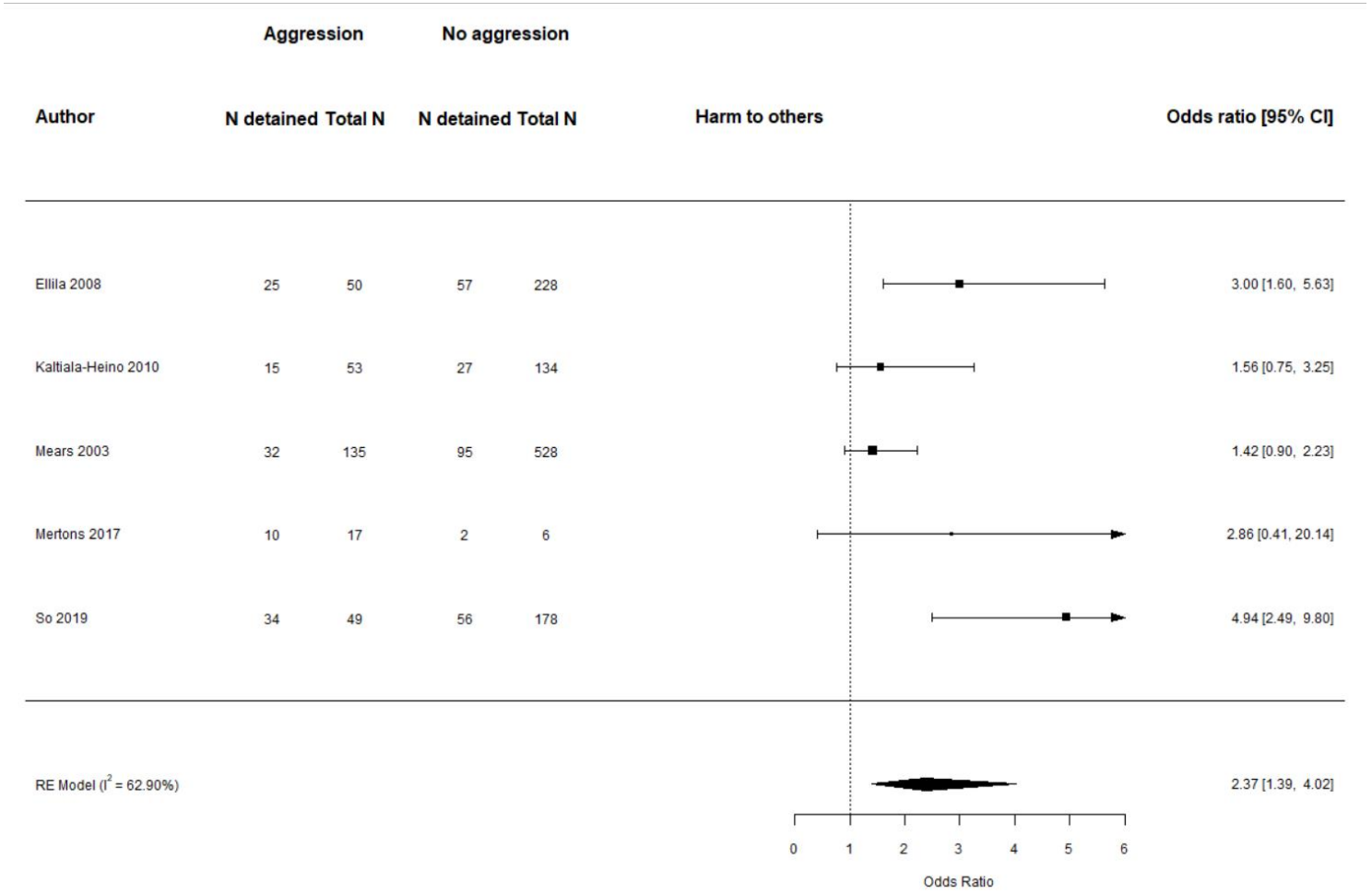


Figure 5.4: Risk to self

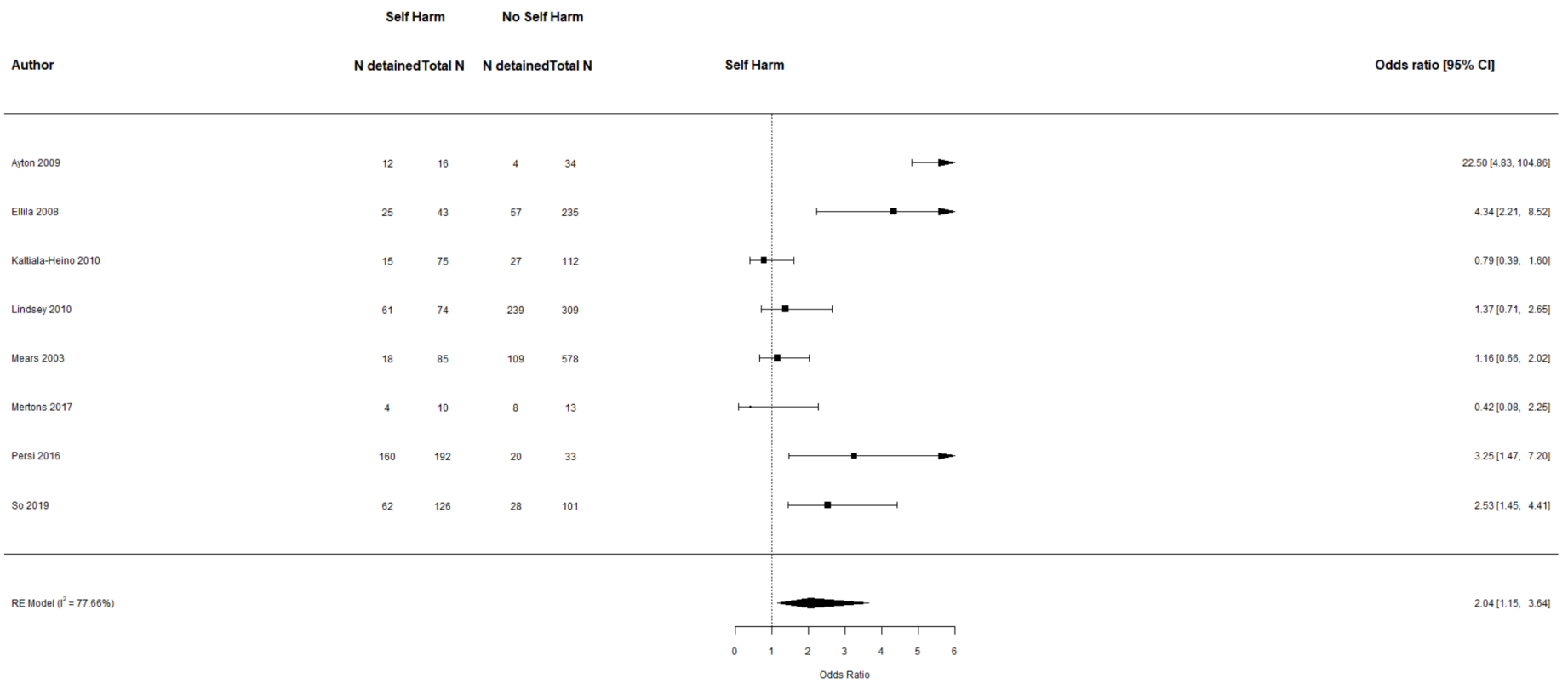


Figure 5.5 Previous abuse

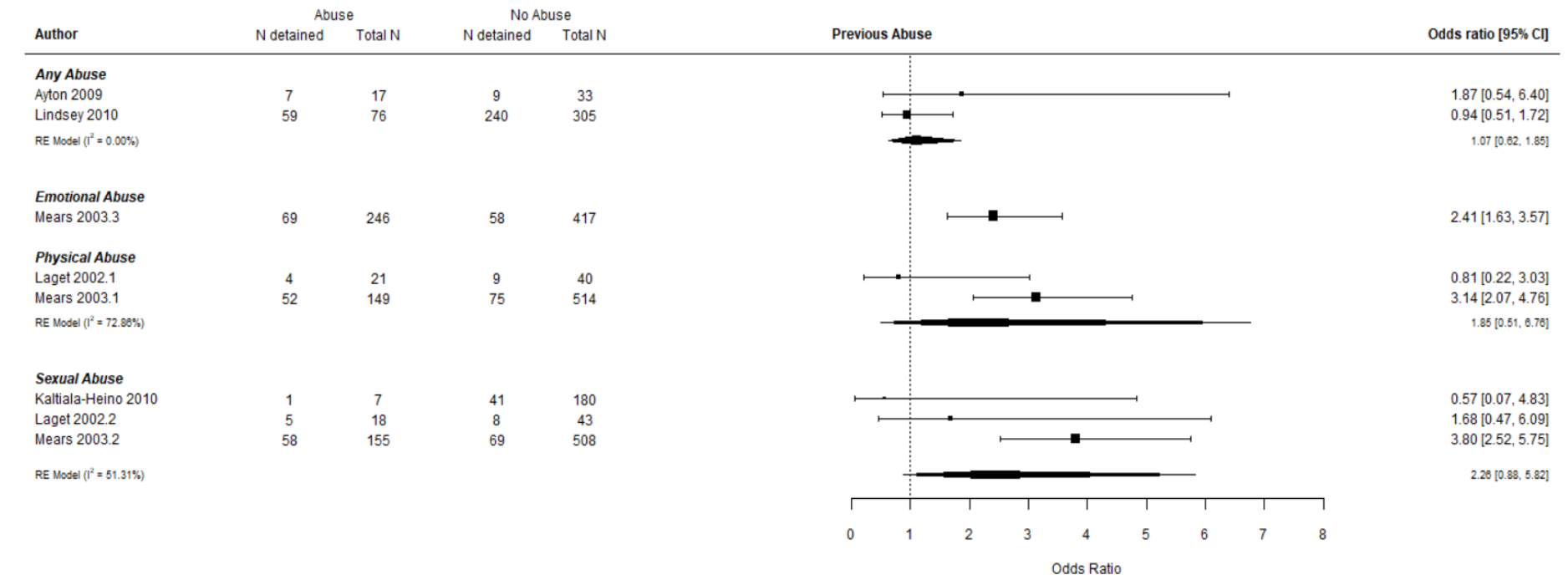


Figure 5.6: Previous hospital admission

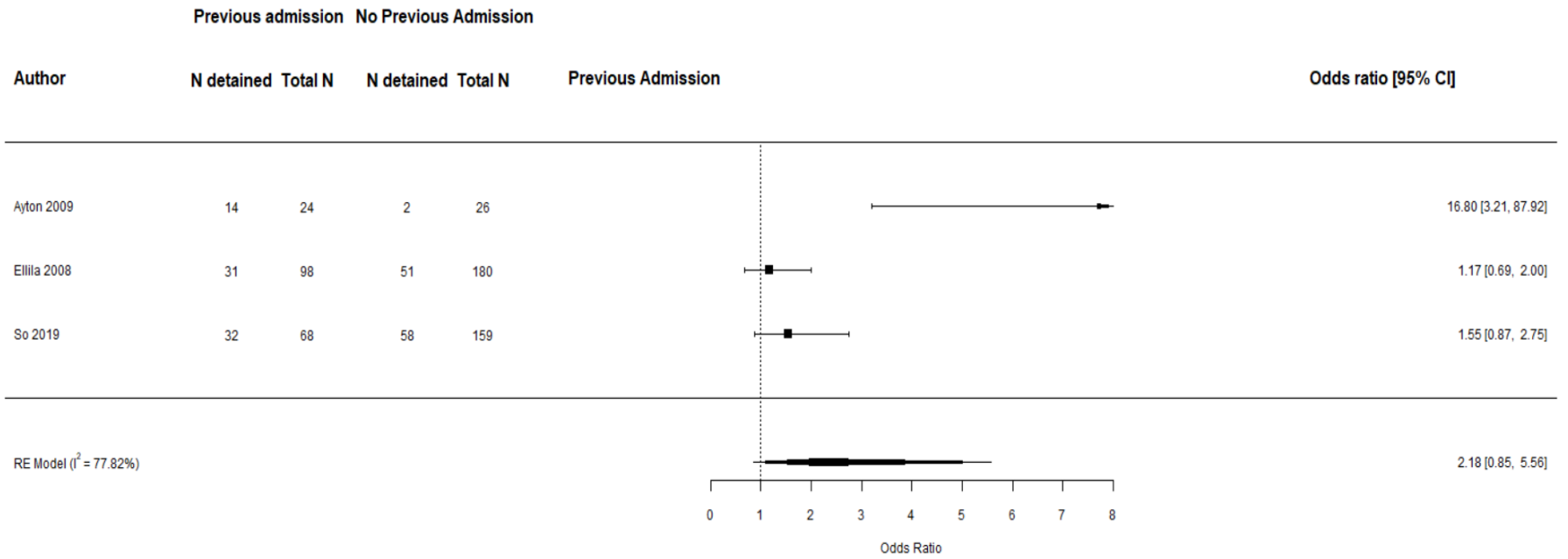


Figure 5.7: Gender

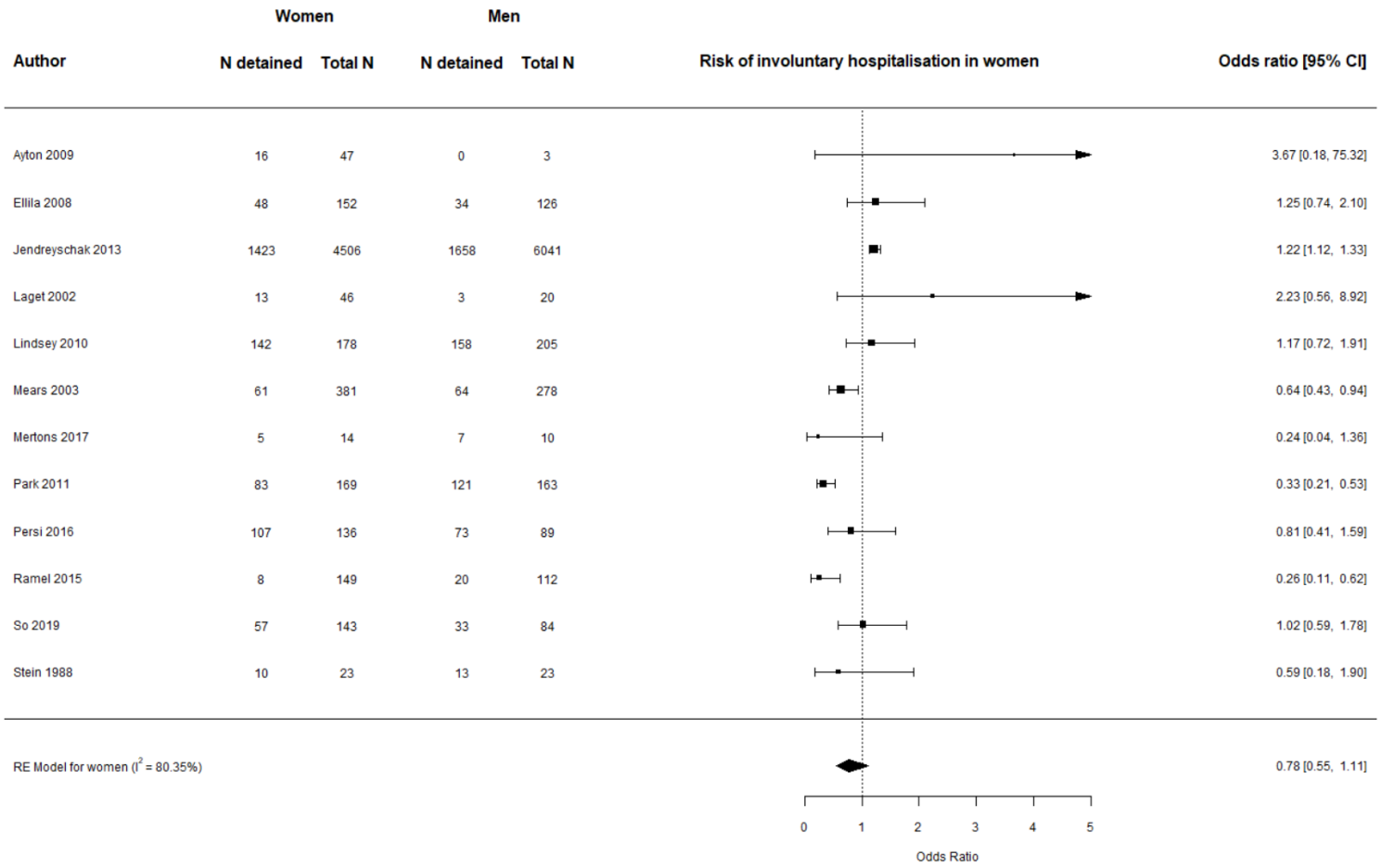


Figure 5.8: Ethnicity

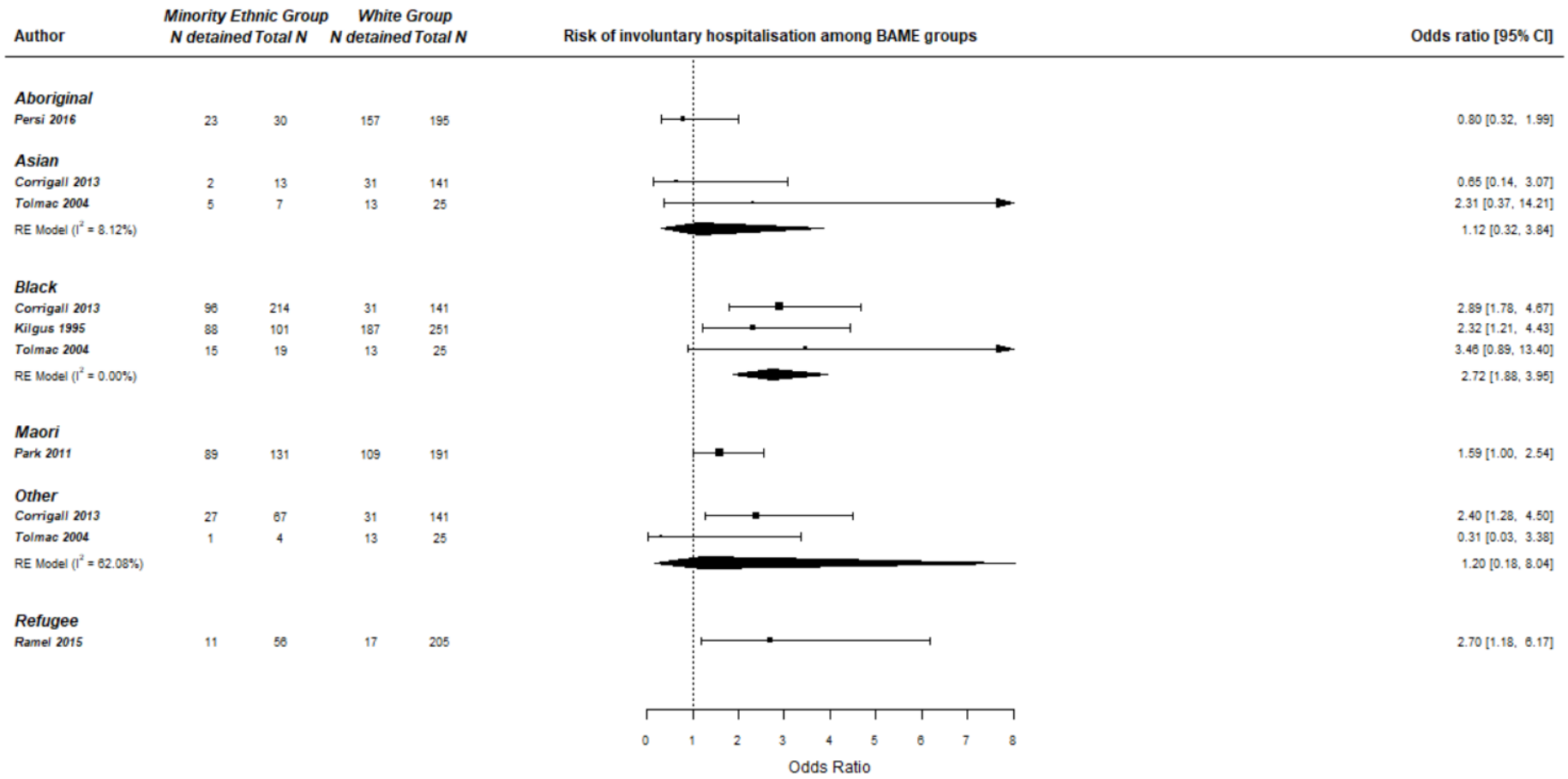


Figure 5.9: Living situation

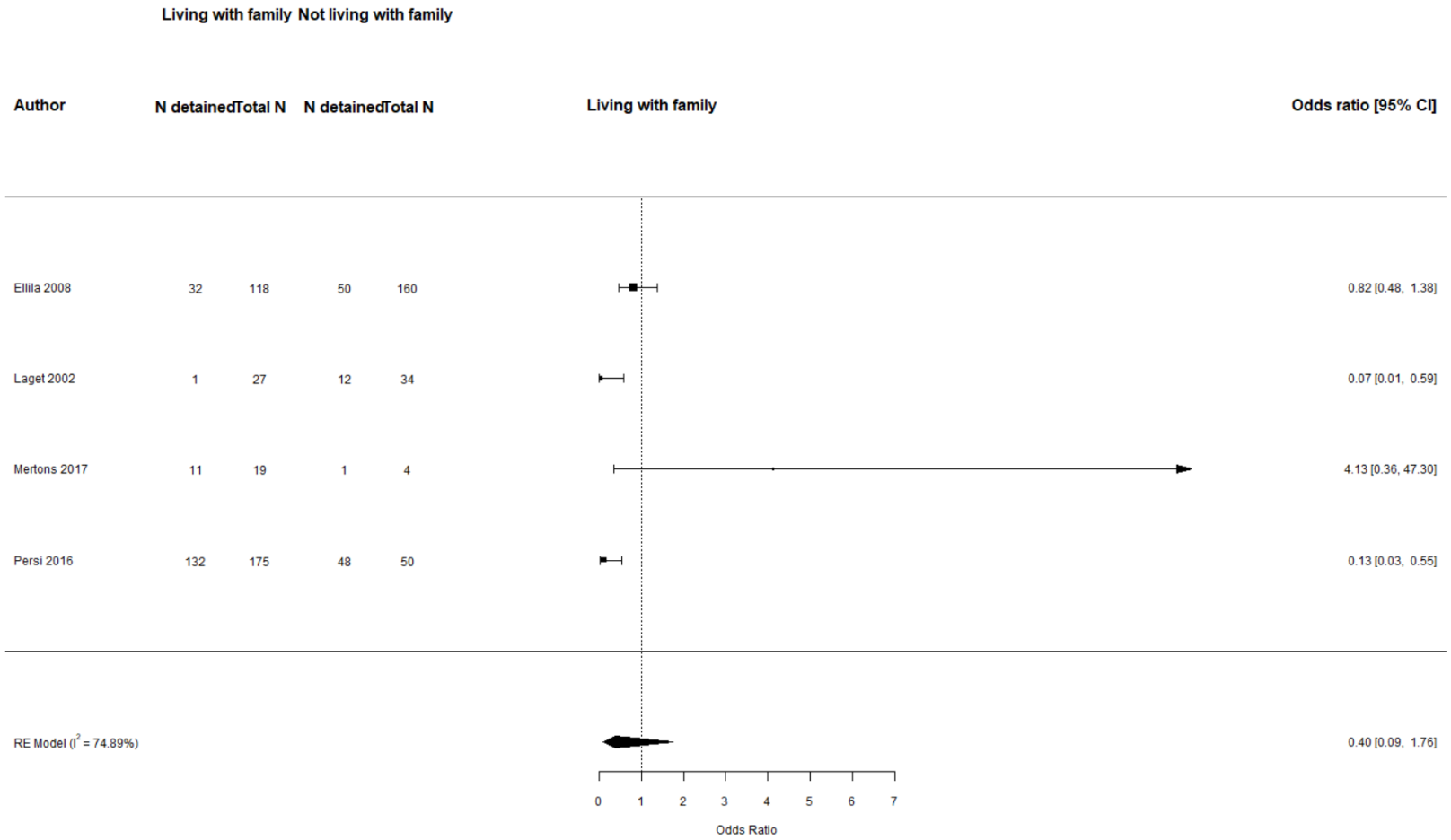
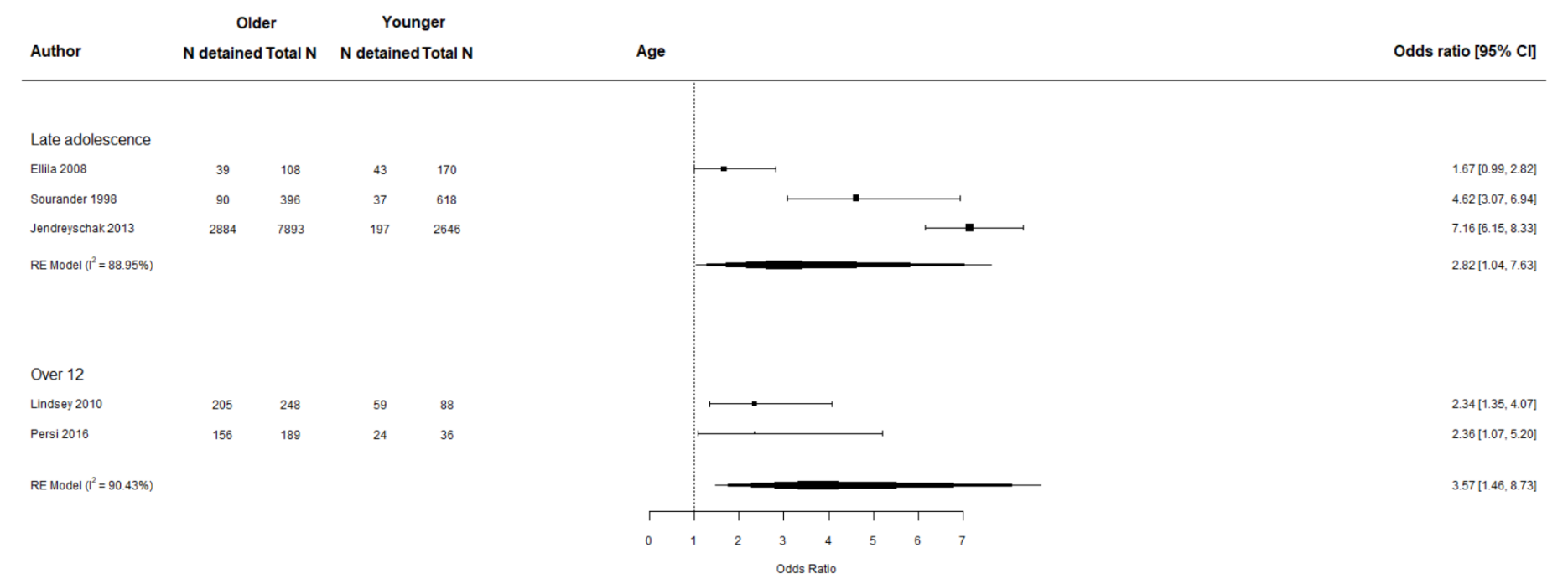


Figure 5.10: Age



5.4.2 *Meta-regression*

In the systematic review and meta-analysis presented in the previous chapter I was able to use meta-regression to measure the potential associations between three study-level characteristics - mean age of the sample, number of women in the sample and publication date - and the study outcomes. Meta-regression should only be conducted where there are 10 studies for each covariate because of the low power to detect statistically significant associations when there are a smaller number of studies.[244] Therefore, due to the small number of studies included in this review, I was not able to investigate the potential associations between the mean age of study participants or the number of women in the study samples and the study outcomes. However, I was able to investigate whether the year in which the study had been published (whether this was pre-2010 or in 2010 or later) had an impact on the findings. This identified that in studies published in 2010 or later, young people with personality disorder were more likely to be admitted voluntarily than involuntarily. There was no evidence that publication date was associated with the legal status of admission for any of the other variables. See Table 5.4. The small number of studies suitable for inclusion in this review also meant that I was unable to restrict the analysis to high-quality studies only.

Table 5.4: Results of meta-regression on publication year

	OR	95% CI	P value
Intellectual disability			
Intellectual disability (vs no intellectual disability)	0.8	0.08-7.7	0.85
Primary Diagnosis			
Psychosis (vs no psychosis)	0.68	0.24-1.91	0.47
Substance misuse (vs no substance misuse)	0.75	0.01-9.86	0.83
Behavioural Disorder (vs no behavioural disorder)	0.72	0.49-1.06	0.094
Mood Disorder (vs no mood disorder)	0.94	0.47-1.87	0.85
Personality disorder (vs no personality disorder)	0.14	0.07-0.3	<0.0001*
Developmental Disorder	0.89	0.2-4.06	0.88
Risk			
Harm to self (vs no harm to self)	0.48	0.13-1.74	0.26
Harm to others (vs no harm to others)	0.74	0.23-2.37	0.62

Previous admission			
Previous admission (vs no previous admission)	0.26	0.01-12.69	0.50
Gender (ref Male)			
Female	0.68	0.3-1.55	0.36
Ethnicity (ref White)			
Black	0.77	0.19-3.15	0.72
Age			
Over 12 (vs under 12)	1.79	0.24-13.38	0.57
Living Arrangements			
Living with family (vs not living with family)	1.39	0.04-47.76	0.86
Previous Abuse (ref None)			
Sexual	0.85	0.04-18.17	0.92

5.4.3 *Funnel plots*

Among included studies, there was no evidence of publication bias through visual examination of the funnel plots, although the small number of studies made these difficult to interpret. Three funnel plots for diagnosis, gender and ethnicity are shown below in figures 5.11-5.13. Please Appendix B for all the funnel plots.

Figure 5.11: Diagnosis

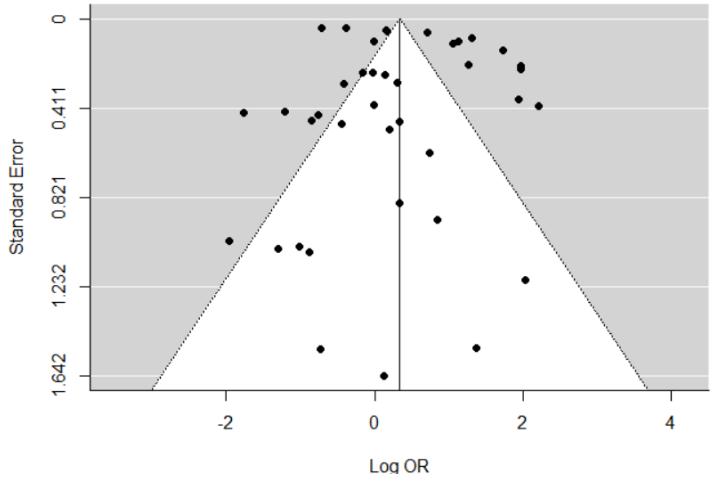


Figure 5.12: Gender

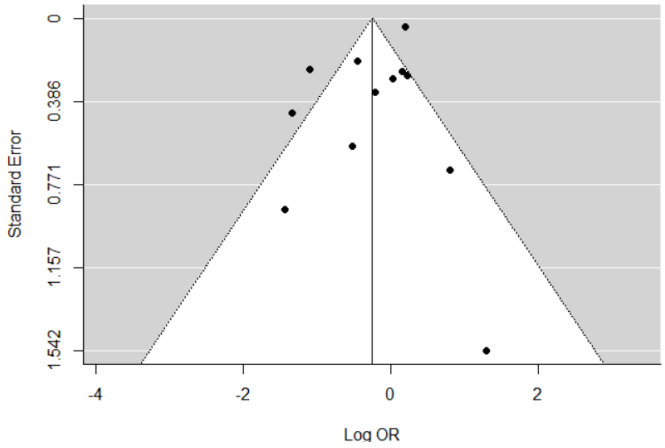
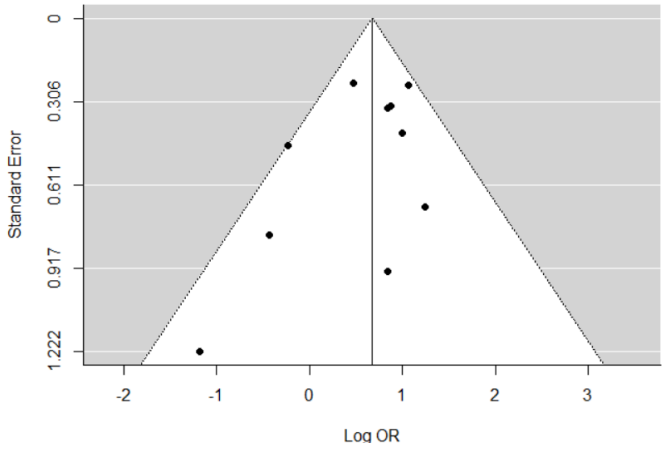


Figure 5.13: Ethnicity



5.4.4 *Narrative Synthesis*

Using published guidance on how to conduct narrative synthesis of data from systematic reviews,[204] I extracted information on variables which had either been decided a priori or were identified in the studies themselves as potentially associated with involuntary hospitalisation and could not be included in the meta-analysis due to lack of relevant data or inconsistencies in the reporting of the data. In the narrative synthesis I therefore investigated the differences between involuntary and voluntary inpatients based on their psychiatric symptoms and severity of illness, interactions between gender and diagnosis, previous mental health service use, education level and regional/socio-economic differences. In addition, several studies included multivariate analysis, which could not be included in the

meta-analysis but are an important source of information about potential relationships between the factors associated with involuntary hospitalisation, so I also summarise the findings from these multivariate analyses below. I also include the quality score when referring to individual studies.

- *Psychiatric symptoms and severity*

A range of measures were used to record the young peoples' psychiatric symptoms and level of functioning. These included the Children's Global Assessment Scale (CGAS), Health of the Nation Outcome Scales Child and Adolescent (HoNOSCA), Beck Depression Inventory-II (BDI-II), Brief Psychiatric rating scale (BPRS), Global Assessment of Functioning (GAF), Stress Trait Anxiety Inventory (STAI) and the Child Behaviour Checklist (CBCL). In the seven studies in which these rating scales were used, five studies (three rated high quality, one moderate quality and one low quality) found that young people admitted involuntarily had scores indicative of significantly more severe clinical presentations and/or poorer levels of functioning than those hospitalised voluntarily.[217,225,228,233,240] These could not be included in the meta-analysis due to variations in how results were reported.

Mears and colleagues used the HoNOSCA, but instead of giving overall scores, they detailed the results of the individual questions within this. They found that those admitted involuntarily to 71 inpatient units in England and Wales had significantly more hallucinations and delusions, peer relationship problems and family problems than those admitted voluntarily. However, those with physical illnesses, somatic symptoms and emotional difficulties were significantly more likely to be admitted voluntarily than involuntarily.[234] A moderate quality Canadian study by Persi and colleagues found that there was no difference in clinical presentation or global level of functioning between the voluntary and involuntary patients with no significant differences between the CGAS or the CBCL scores between the two groups.[237] However, in this study, although 80% of the patients were admitted involuntarily, only 11% of the patients remained involuntarily detained after psychiatric review, leading the authors to suggest that involuntary admissions prior to formal psychiatric review may be being used inconsistently and possibly even inappropriately.

- *Gender and diagnosis*

Most studies measured differences in gender between the voluntary and involuntary patients, but only four studies stratified the legal and diagnostic groups by gender.

Jendreyschak and colleagues found that in those younger than 12 years, having a diagnosis of psychosis or intellectual disability was significantly associated with an involuntary rather than voluntary admission among males but not females. In patients aged 12 years or older, both male and female patients with a diagnosis of substance misuse disorders, psychosis, neurotic disorders, or intellectual disability were significantly more likely to be admitted involuntarily than voluntarily (the study was rated as high quality).[229] Mears and colleagues found that most of the involuntary patients with mood disorders were female and most of those admitted involuntarily with a diagnosis of schizophrenia were male (the study was rated as low quality).[234] In a high quality Finnish register study, Kaltiala-Heino also found that affective and neurotic disorders were the most common diagnoses among the female patients who were admitted involuntarily, while conduct disorders, psychotic disorders and substance misuse were the most common diagnoses in the male patients admitted involuntarily.[230] In a later, smaller (n=187) but also high quality study, Kaltiala-Heino found that hostility, "temper tantrums" or breaking property were significantly associated with being referred to hospital involuntarily, but only in girls.[231]

- *Previous contact with mental health services*

Only two studies reported whether any previous admissions were involuntary and both found that a previous involuntary hospitalisation was associated with an increased likelihood of further involuntary hospitalisaiton.[218,240] Khenissi and colleagues found that more of the involuntary than voluntary patients had previously been sent for involuntary treatment (51.3% vs 14.9% p=<0.001).[218] However this study is not included in the meta-analysis as the precise number of voluntary patients is not stated. The other study to include a measure of previous involuntary hospitalisation was a high-quality study by So and colleagues which also identified that a prior compulsory admission was significantly associated with involuntary versus voluntary admission (p = <0.01).[240]

Contact with community psychiatric services prior to admission was reported in two studies, both of which were rated as high quality.[231,240] So and colleagues found that, "lack of medical compliance" and "lack of motivation for treatment", measured on the Severity of Psychiatric

Illness Scale, were both significantly associated with involuntary hospitalisation on multivariate analysis, although it is unclear whether these scores relate to previous levels of motivation and medical compliance, or compliance with the emergency assessment during which the scale is administered.[240] Kaltiala-Heino identified that the young people hospitalised involuntarily were significantly more likely to have been referred to the psychiatric hospital by primary care or non-psychiatric specialists, while those who were admitted voluntarily were more likely to have been referred by an adolescent psychiatrist.[231] In the study by So and colleagues these findings were reversed, and the young people admitted involuntarily were more likely to have been referred by psychiatric services than a general practitioner.

Involvement of social care is mentioned in three studies.[245–247] Ellila and colleagues found that a planned out-of-home placement on discharge from hospital was associated with involuntary treatment. Jaworowski and Zabow found that most of the involuntary patients in their study were referred by social services, but no further detail is given.[245] Only one study specifically included data on whether young people were adopted or in a foster placement before the hospital admission and found that these young people were significantly more likely to be admitted involuntarily than voluntarily.[247]

- *Education level*

Despite almost all of the patients in these studies being of school age, only two studies mention educational status. Mertens and colleagues report that only 5 of the 12 young people in hospital involuntarily were in school while 9 of the 12 who were in hospital voluntarily were in school, although do not provide any statistical analysis of this data. The reasons why more of the patients in hospital involuntarily seem not be attending school is not discussed.[59] Khenissi and colleagues report that 35.9% of those in hospital involuntarily attended a school for children with specialist educational needs (SEN), while this percentage was only 16.4 in the voluntary group.[248] Again the possible reasons for this discrepancy are not discussed.

- *Regional and socio-economic differences*

One longitudinal Finnish study compared voluntary and involuntary hospitalisations across districts and identified that involuntary hospitalisations of minors increased vastly from 1996 to 2003.[239] The authors suggest that this could be due to the economic recession, which may

have limited the availability of outpatient resources. Additionally, they identified that in areas with high rates of involuntary hospitalisation, child welfare placements were considerably more common. The reason for this finding is not clear, but the authors suggest that it may be related to regional differences in the resources available to support young people effectively in the community. None of the other studies included in the review considered the potential association between socioeconomic status and involuntary care.

- *Multivariate analyses*

Six studies included multivariate analyses allowing adjustment for factors potentially associated with involuntary hospitalisation. Ellila and colleagues identified seven factors which were significantly associated with involuntary hospitalisation on univariate regression analysis: substance use disorder, suicidal act, psychosis, violent act, out-of-home placement, CGAS <40 and age 16-17.[228] When all of these were controlled for, only three: substance use disorder, suicidal act and psychosis were independently associated with involuntary legal status. They also found that there was no significant gender-age interaction. Jendreyschak and colleagues used direct logistic regression to assess the impact of 10 variables on the likelihood of being admitted to hospital involuntarily. [229] Of these, seven made a highly significant contribution (p=<0.001): age of 12-17, substance use, having a psychotic disorder, intellectual disability, behavioural disorders, anxiety disorders, being admitted in duty time; and three factors made a significant contribution (p=<0.01): male gender, affective disorder, and previous admission. The strongest predictor for involuntary hospitalisation in their study was having intellectual disability (OR 15.74). Sourander and colleagues also found that a diagnosis of psychosis and older age were significantly associated with involuntary hospitalisation on multivariate analysis, once they had controlled for gender, whether or not it was a first admission, whether they were admitted to an adult or adolescent unit, and the treatment year.[241] On stepwise multiple logistic regression analysis, So and colleagues found that any DSM-IV axis 1 diagnosis, high risk of suicide, danger to others, previous compulsory care and lack of motivation/compliance all predicted involuntary over voluntary hospitalisation.[240] Kilgus and colleagues were the only authors to include ethnicity in multivariate analysis and found that African Americans were twice as likely as White Americans to be admitted to hospital involuntarily (OR 2.051, p=0.043).[249]

5.5 Discussion

Despite the paucity of literature on this topic, this systematic review, meta-analysis and narrative synthesis has identified several clinical and social factors that are associated with an increased likelihood of involuntary over voluntary hospitalisation in children and adolescents. The clinical factors associated with involuntary rather than voluntary hospitalisation include a diagnosis of psychosis, substance misuse or intellectual disability, as well as the presence of perceived risk of harm to self or others. On narrative synthesis, more severe psychiatric symptoms and poorer levels of functioning also appear to be related to involuntary rather than voluntary hospitalisation. Anxiety and behavioural disorders were associated with voluntary rather than involuntary hospitalisation. In terms of sociodemographic factors, older age and being from a Black rather than a White ethnic group were associated with involuntary rather than voluntary hospitalisation.

I was only able to identify seven studies that mentioned the ethnicity of the children and adolescents who are involuntarily detained, [217,227,232,236–238,243] compared to 71 studies included in a recent international meta-analysis of ethnic variations in compulsory detention among adults.[250] This demonstrates how little attention this topic has received to date.

There was a paucity of information in the studies on looked-after-young people, who are vulnerable to high rates of mental health difficulties and adverse outcomes.[251] There was also very little information in the studies on pathways into involuntary care, including police involvement, any previous involuntary hospitalisation, or the educational status of the young people. None of the papers included in the study measure the socioeconomic status of the young inpatients, despite the known associations between poverty and poor mental health outcomes.

In the adult literature, the concept of insight is frequently recorded and lack of insight, where measured, is strongly associated with involuntary hospitalisation.[252] Insight is in itself a problematic concept,[253] but it is completely absent from the studies in this review despite the fact that levels of insight are usually recorded in the psychiatric assessment of young people, just as they are in adults. Also largely absent from these studies is any record of the young peoples' competence or capacity, which should be crucial in deciding whether a young person

is able to make decisions about their care, and the level of parental/carer involvement that is needed.

5.5.1 Limitations

This study has several limitations. As an international review, I have included studies from a range of countries with different legal criteria for involuntary hospitalisation, and different mental health systems and processes. This, along with a range of study methodologies, settings, and time-periods, has likely contributed to the high heterogeneity between the studies. The substantial heterogeneity means that the pooled data needs to be interpreted with caution. I attempted to minimise heterogeneity in this review by only including studies which compared voluntary and involuntary patents. However, this meant excluding any population studies, which may have provided further information about factors associated with involuntary hospitalisation among children and adolescents.

The included studies are all from high-income countries, which precludes any investigation into the involuntary hospitalisation of children and adolescents in middle and low-income countries, where specialist child services and expertise are often rare. I have focused on young people detained in hospital under mental health legislation, but as has already been discussed, some young people are admitted to hospital 'voluntarily' under parental/guardian consent, which could be interpreted to be a *de facto* involuntary admission. It would be helpful to know more about the differences between these types of admissions in terms of risk factors, experiences, and outcomes, and this should be the focus of future research. However, the main limitation is the paucity of research into the involuntary hospitalisation of young people such that my meta-analysis was limited in some cases to two studies. The small number of studies meant that further exploration of potential confounders through meta-regression and sensitivity analysis was not possible (with the exception of publication year). In addition, the number of studies that included adjusted analyses of factors associated with involuntary hospitalisation was small, although the results of these were all in line with the main findings. The paucity of data also meant that I had to reduce ethnicity into four over-simplistic and largely non-representative ethnic groups. Further research in this field should try to avoid such amalgamation, potentially using 'big data', including the growing number of large-linked national datasets, to conduct more fine-grained analysis and gain a better

understanding of the associations between involuntary hospitalisation and ethnicity among children and adolescents.

5.6 Conclusions

This chapter presents, what is to my knowledge, the first international systematic review, meta-analysis and narrative synthesis investigating the clinical and social factors associated with involuntary hospitalisation among children and adolescents. It demonstrates that this is an area where the research to date has been extremely limited and there were factors associated with involuntary hospitalisation in adults which I could not investigate among children and adolescents, such as lack of insight, previous involuntary hospitalisation and socio-economic deprivation. As I found in the adult review in chapter 4, a diagnosis of a psychotic disorder, substance misuse, more severe illness and risk to others were all associated with an increased likelihood of involuntary over voluntary hospitalisation. In addition, in this review I have found that the association between ethnicity and involuntary hospitalisation that has been consistently shown in adult studies, also seems to occur among children and adolescents. Young people from Black groups were much more likely than young people from White groups to have an involuntary rather than a voluntary hospitalisation.

In order to investigate further the factors associated with involuntary hospitalisation identified in these two literature reviews, I went on to conduct two historical cohort studies using electronic health records from the largest mental health trust in England. I wanted to use 'big data' to investigate the socio-demographic and clinical differences between young people admitted both voluntarily and involuntarily to Child and Adolescent psychiatric inpatient units. The next section of the thesis presents these studies, beginning with a description of the database and setting, then moving on to present the studies and their findings.

Part 3

The following four chapters of the thesis describe how I have further investigated the use of the Mental Health Act in a large sample of children and adolescents in Southeast London using electronic health records. The main research question I set out to answer was:

> Which clinical and sociodemographic factors are associated with involuntary rather than voluntary hospitalisation among children and adolescent inpatients in Southeast London?

My secondary question was about the relationship between these factors and whether there are sociodemographic factors associated with involuntary hospitalisation, once adjusting for the clinical factors.

Chapter 6 introduces the concept of administrative (or big) data and the potential benefits of its use in research generally and for my research questions specifically. I also present in this chapter the data source I have used, the Clinical Record Interactive Search System (CRIS), and its geographical setting. Chapter 7 describes the cohort and variables used in the analysis, along with the results of my primary analysis, which examines the associations between involuntary hospitalisation and sociodemographic characteristics (gender, age, ethnicity and deprivation level) as well as psychiatric diagnosis, severity of illness and the presence of risk. Chapter 8 describes a secondary analysis in which I investigate the associations between access to and use of mental health services and involuntary rather than voluntary hospitalisation. Finally, chapter 9 summarises the findings from the two CRIS studies and discusses their strengths and limitations.

Chapter 6: Data source: The Clinical Record Interactive Search System (CRIS)

Chapter summary

This chapter outlines the data source I have used to answer my research questions. I begin with a discussion of the use of administrative data (or 'big data') in research and what this might add to the existing research in this field. I then introduce the data source used in this thesis, the Clinical Record Interactive Search (CRIS) system, which is hosted by South London and Maudsley NHS Trust (SLaM). I also provide an overview of the SLaM catchment area and the child and adolescent mental health services available within the Trust, with a particular emphasis on the inpatient services as these are the mental health services of primary focus in this thesis.

6.1 Use of administrative data in research

One of the main limitations of the research that has been done into the use of involuntary psychiatric care of children and adolescents is that most of it relies on retrospective data from hospital notes or surveys, from a small number of hospitals or psychiatric units, over short time periods. In the UK, for example, the largest of the six studies that have been published in this field is a cross-sectional survey of 663 child and adolescent inpatients in 71 units across England and Wales on a single day.[254] The four largest studies identified in the international systematic review described in the previous chapter are from Finland and all use samples from the National Hospital Discharge Register (NHDR), which includes details of all hospital discharges across the country.[57,58,224,245]

For decades, Scandinavian countries have been developing and using whole population data repositories all linked via a common identification number, acquired at birth or migration to these countries. These repositories can index, on an individual level, a range of clinical and social information including birth details, sociodemographic details, secondary health care use and social and criminal justice involvement.[255] These types of data repositories are types of administrative, or 'big' data. Big data is usually defined in terms of the '3 Vs': a large quantity of information (volume), which is derived from multiple sources and presented in a range of formats (variety) and is dynamic and changing (velocity). A fourth 'V', veracity, has also been proposed to highlight the potential challenges in ensuring the accuracy and credibility of these large-volume data sources.[256]

In the UK, the public sector collects huge amounts of electronic data. The Hospital Episode Statistics (HES) database, for example, contains details of every NHS hospital inpatient admission, emergency department and outpatient contact in England and adds 125 million records to its database each year.[257] Most NHS trusts now use electronic health records and the Department of Health and Social Care (DHSC) and NHS England aim to ensure that these are used in all NHS services and 80% of social care providers by 2025.[258] The widespread move from paper clinical notes to electronic records has created a valuable data source, which is increasingly, albeit not routinely, being accessed for research purposes.[259] Analysis of electronic health records (EHR) can afford a unique opportunity to understand health service use among a large clinical sample over an extended time period. It improves on conventional epidemiological approaches, such as prospective cohort studies, in terms of affordability, and is less likely to suffer from methodological limitations such as non-response and attrition biases.[256] However, the fact that these data have not been collected for research purposes is an important challenge. Not only does this mean that the data are usually very complex and likely to contain variations in recording and missing data, researchers analysing or "mining" administrative data such as EHRs, need to consider why the data has been collected, by whom and how this might impact on the study findings. In addition, the use of healthcare records for research has also been the source of public concern, to the extent that a plan in 2014 to routinely extract data from primary care medical records to facilitate research had to be suspended.[260]

Despite the limitations mentioned above, administrative data can be ideal for conducting epidemiological analyses with high statistical power, and for modelling dynamic changes over time. Systems and partnerships, such as Administrative Data Research UK (ADR UK) and DATAMIND are being established throughout the UK, which enable researchers to access public sector data.[261,262] A system which has been created to enable researchers to access NHS data is the Clinical Record Interactive Search (CRIS) system, hosted by South London and Maudsley NHS Trust (SLaM). SLaM is the largest mental health trust in England and is also linked to the Institute of Psychiatry, Psychology and Neuroscience, which is a world leading centre for mental health research. CRIS is the data source I have used in this thesis to compare the children and adolescents who were admitted to SLaM inpatient psychiatric units under the MHA with those who were in hospital voluntarily, over a 13 year period. I will first

introduce the CRIS database, then describe the catchment area of the SLaM Trust and the child and adolescent psychiatry services that it provides. The details of the historical cohort study I have conducted using CRIS and its findings will be presented in Chapter 7.

6.2 The Clinical Record Interactive Search (CRIS) system

Clinical records for SLaM services have been fully electronic since 2006, and in 2008, the SLaM Biomedical Research Centre Case Register was set up to derive data directly from these electronic health records by making them available for research through the CRIS application.[263] CRIS extracts data from the electronic health records (including, for example, risk and clinical assessment proforma, clinical correspondence, progress notes, admission, discharge and outpatient appointment dates) and removes personal identifiers, so that the resulting pseudonymized data can be safely accessed by researchers with minimal risk of deidentification.[264] CRIS updates regularly and is therefore a dynamic data source which enables researchers to track patients at the individual level over time. CRIS enables the extraction of data from structured fields in the health records as well as from areas of free text. Structured field data is where the clinician has had to choose from a fixed selection of categories, for example, a box with a drop-down menu of options. Examples of data that usually come from structured fields include ethnicity and primary diagnosis. Some of these structured fields will be mandatory for clinicians to complete (for example, the appointment date and time, and the type of contact), while many others will not be. There may, therefore, be occasions when these structured fields are not completed by the clinician - perhaps because of uncertainty about which value to assign, or because of time constraints. This can lead to missing data fields, and potentially information bias if there are certain circumstances when a clinician is more or less likely to complete these non-mandatory fields. It is also important to consider *when* the structured field was completed as these values may change over time, for example, someone's primary diagnosis may change over the course of their contact with mental health services.

Using CRIS, it is also possible to extract data from areas of free text in the health records, such as information within progress notes or clinic letters.[265] Clinicians often prefer to use free text notes over pre-designed structured fields as they allow for a more nuanced analysis and description of a patient's difficulties, and perhaps represent the complexity of clinical practice more realistically.[266] However, this type of clinical data can be difficult to use in research. For

example, a key word search for something like 'risk to self', would provide every mention of this term in the health record, without discriminating between positive or negative statements, whether this refers to a patient's current mental state or was just a part of a clinician screening. To support the extraction of this 'unstructured' data, natural language processing (NLP) algorithms can be used. These can be either rule based, in which a combination of text-based terms are combined with logic rules (via AND, NOT and OR) in order to positively or negatively identify a particular event; or based on machine learning techniques, which rely on pattern recognition. The precision and sensitivity of the NLP applications, whether they follow rule-based or machine learning approaches, would then be validated by comparing their output to a gold-standard output, often created by a manual review of the same extracts of free text. An NLP application to identify suicidal adolescents has been developed and validated and was used in this thesis.[267]

CRIS has received research ethics committee (REC) approval as a database for secondary analysis (Oxford REC C reference 18/SC/0372). It has a patient-led oversight committee, which reviews the proposed research projects ensuring that they are ethical and legal, and reports to SLaM's Caldicott Guardian. The governance structures also include regular patient and public-facing engagement events, robust auditing processes and a requirement for all users to have an NHS research passport. In addition, patients can opt-out of their anonymized data being included in CRIS, and this is advertised in all publicity materials and initiatives but very few people have ever requested this.[265]

6.3 The setting

6.3.1 The SLaM Catchment area

SLaM provides secondary mental healthcare services to a catchment of four south London boroughs: Croydon, Lambeth, Lewisham and Southwark. The population of the catchment area is 1,332,055 individuals of whom 20.8% are aged 16 and under, and a further 9.3% are aged 17 to 24 (2018 figures). The age and gender divides are similar to the rest of London and England as a whole, but the proportion of people from White ethnic backgrounds in the SLaM catchment is much lower than the rest of England. In addition, in SLaM there are higher levels of socioeconomic deprivation compared with other areas of London, and England as a whole, and more school children eligible for and claiming free school meals.

Table 6.1: Socio-demographics of the SLaM catchment area (Croydon, Lambeth, Lewisham and Southwark), compared to London and England.[268]

		SLaM catchment area	London	England
Population (2018)		1,322,055	8,908,081	55,977,178
Gender (2018)	Male	49.5%	49.9%	49.4%
	Female	50.5%	50.1%	50.6%
Age (years) (2018)	Preschool ≤4	6.7%	6.9%	6.0%
	Primary school age (5-11)	8.9%	9.2%	8.7%
	Secondary school age (12-16)	5.2%	5.5%	5.6%
	Young adult (17-24)	9.3%	9.4%	9.7%
	Adult (≥25)	69.9%	68.9%	70.1%
Ethnicity (2011)	White	55.0%	59.8%	85.4%
	Black	24.7%	13.3%	3.5%
	Asian	10.8%	18.5%	7.8%
	Mixed	6.9%	5.0%	2.3%
	Other	2.5%	3.4%	1.0%
Deprivation: Number of LSOAs in each IDACI quintile (2019)	1 (most deprived)	34.5%	21.7%	20.0%
	2	33.9%	28.3%	20.0%
	3	17.4%	21.3%	20.0%
	4	9.1%	15.6%	20.0%
	5 (least deprived)	5.1%	13.1%	20.0%
Proportion of pupils known to be eligible for and claiming free school meals (2019)		26.3%	20.0%	21.6%

Note: Estimates derived from government, Office for National Statistics sources and Department for Education's 2019 school census statistical release (158-161).
Abbreviations: IDACI=Income Deprivation Affecting Children Index, LSOA=Lower Super Output Area, SLaM=South London and Maudsley NHS Foundation Trust.

6.3.2 SLaM Child and Adolescent Mental Health Services

As with many other areas of England, SLaM's mental health services for children and young people are organised around a four-tier system:

- Tier 1: universal services such as general practitioners and school nurses.
- Tier 2: early intervention and targeted help, such as school counselling and youth mentoring.
- Tier 3: specialised and targeted outpatient and community teams.
- Tier 4: inpatient provision and highly specialised tertiary outpatient teams.

In most NHS Trusts across England, the services provided within Tiers 1 to 3 are only accessible to children and families living in the catchment area of the Trust. SLaM is unusual in that it provides Tier 3 child and adolescent mental health services (CAMHS) which are specifically for residents within each of the four boroughs in the SLaM catchment area (eg. Croydon CAMHS, Lambeth CAMHS etc) as well as national and specialist outpatient services which are also accessible to patients from outside the catchment area. The specialist CAMHS outpatient services, which are open to referrals from across the UK, include diagnostic specific services such as the Body Dysmorphic Disorder service, the Obsessive Compulsive Disorder service and the Trauma, Anxiety and Depression clinic, as well as treatment specific services such as the Dialectical Behaviour Therapy Service which specialises in the treatment of severe emotional dysregulation, self-harm and suicidal ideation.

Tier 4 services in England are commissioned by NHS England. Although inpatient services are intended to serve a clearly defined geographical area and to meet the needs of the local population, most accept referrals from across the UK if the admission criteria are met and there is bed space available.[269] The placement of a child or adolescent into an inpatient unit outside of their catchment area is referred to as an 'out of area placement'. Where this occurs due to capacity issues (i.e.. Because there are no bed spaces available in the child's home area, rather than the child being moved out of their own area for their safety/wellbeing) this can impact on access to education, family, friendships as well as making liaison with the community services more difficult and hamper discharge planning.[270,271] Therefore, NHS England emphasise the importance of treating children as close to home as possible.[269] However, data from the office of the Children's Commissioner found that in 2020, 21% of child and adolescent inpatients were placed more than 50 miles from home due to a national shortage of CAMHS inpatient beds.[272]

SLaM has four child and adolescent inpatient units and like most other Tier 4 units, they accept referrals from the SLaM catchment area as well as from the rest of the UK.[273] There

are two open adolescent units (where the doors are not routinely locked) which both treat young people aged 12 to 18: Snowfields Adolescent Unit (based in the Maudsley Hospital) which has 11 beds and Bethlem Adolescent Unit (in the Bethlem Hospital) which has 12 beds. They both offer mental health care for adolescents with serious mental illnesses including psychotic illnesses (about half of the patients on these units have psychosis), mood disorders, and other psychiatric or neurodevelopmental conditions, or where there is uncertainty about the diagnosis. They accept emergency admissions and people who have been detained under the MHA as well as those admitted voluntarily. As they are open wards, they can only accept young people who can be cared for safely in such an environment, and so potential risk has to be carefully and regularly assessed.

There is an 8-bed Psychiatric Intensive Care Unit (PICU) also in the Bethlem Hospital for adolescents aged 12 to 18 years old with severe mental health difficulties who need a more intensive and secure setting that the general adolescent wards can provide. The aim of this unit is to manage short-term behavioural disturbance, such as serious risk of suicide, absconding with threat to safety, or aggression. All of the young people admitted to the PICU will be under the MHA. There is also Acorn Lodge Children's Unit for children aged four to 12 years old who need a period of intensive assessment and treatment for an established or suspected mental health problem. Children are admitted to Acorn Lodge during the daytime in the week but are expected to spend evenings and weekends at home.

6.4 Conclusion

In this chapter I have introduced the potential benefits of using administrative data in research as well as some of the potential challenges. I have provided an overview of CRIS, a database which enables researchers to access the electronic health records from SLaM, the largest mental health trust in England and described the child and adolescent mental health services available in SLaM. The following chapters describe the historical cohort studies I have conducted using CRIS to investigate the use of the Mental Health Act in children and adolescents.

Chapter 7: Social and clinical factors associated with Mental Health Act use among children and adolescent inpatients: A historical cohort study using electronic health records

The contents of this chapter and the next have contributed in part to the following output

1. A peer reviewed article:

Freitas, D., Walker, S., Nyikavaranda, P., Downs, J., Patel, R., Khondoker, M., . . . Hayes, R. (2023). Ethnic inequalities in involuntary admission under the Mental Health Act: An exploration of mediation effects of clinical care prior to the first admission. *The British Journal of Psychiatry, 222*(1), 27-36. doi:10.1192/bjp.2022.141.

7.1 Chapter summary

This chapter describes the first stage of a study I conducted to investigate the social and clinical factors which are associated with Mental Health Act use among children and adolescents. Using a cohort of people aged under 18 who had a SLaM inpatient admission between January 2007 and May 2021, I compared those who had been placed under a section 2 or 3 of the MHA during their admission, with those who had been in hospital voluntarily throughout. Logistic regression was used to investigate the associations between clinical factors (psychiatric diagnosis, risk to self and others, severity of illness) and social factors (gender, age, ethnicity, deprivation level) and involuntary rather than voluntary treatment.

I detail the variables used, describe the cohort, present the results of the analysis and then summarise the findings.

7.2 Introduction

My two international systematic reviews, described in the second section of this thesis, found that there were clinical and sociodemographic factors associated with increased odds of experiencing an involuntary rather than voluntary psychiatric hospitalisation among children, adolescents, and adults. The clinical factors associated with involuntary hospitalisation among people of all ages included having a diagnosis of psychosis or substance misuse disorder as well as being more severely unwell and presenting a risk to others. In children and adolescents specifically, a diagnosis of intellectual disability was also associated with involuntary

hospitalisation, as was being an older rather than younger adolescent or a child. As had already been demonstrated in research from adult populations, I also found that children and adolescents from Black groups were more likely than those from White groups to be involuntarily rather than voluntarily hospitalised. However, due to the very limited attention that has been given to the use of involuntary hospitalisation among children and adolescents in research to date, these findings are based on just 23, mainly moderate quality studies, most of which had small samples, and/or used retrospective hospital data from one or two units over a short time period. In addition, with the data available from the studies included in the systematic review, I was unable to investigate the potential relationships between the factors associated with involuntary hospitalisation.

In order to further investigate which clinical and sociodemographic factors are associated with involuntary hospitalisation in children and adolescents in England, and to understand more about the potential interactions between these factors, I used CRIS to identify a large cohort of children and adolescents who were inpatients in SLaM over a 13-year period. Focusing on the social and clinical factors which I had found to be associated with involuntary hospitalisation in my systematic review, I designed an extensive and detailed extraction plan which would enable me to compare the patients who had been on a section 2 or 3 of the MHA with those in hospital voluntarily (either under their own consent of the consent of their parent/guardian). I hypothesised that older adolescence, a diagnosis of psychosis, more severe illness and the presence of risk to others would all be associated with involuntary hospitalisation rather than voluntary among the child and adolescent inpatients. Based on the findings from the adult literature and the systematic review presented in chapter 5, I also hypothesised that young people from non-White groups would be more likely than young people from White groups to have an involuntary rather than voluntary hospitalisation.

7.3 Methods

7.3.1 Sample

I used CRIS to identify a cohort of people who were admitted to the SLaM child and adolescent inpatient units between 1 January 2007 (when CRIS data begins) and 31 May 2021 (the date of the first data extraction) and were aged under 18 years at the time of admission. If a young person had more than one SLaM inpatient admission, only their first admission was included.

I spent several months working with clinical and academic colleagues with experience of using the CRIS database to build a detailed, extensive extraction plan which ensured that I had extracted all of the important information in a way that corresponded to my research questions. For example, ensuring that I only extracted diagnostic decisions which were made at the time of the hospital admission, rather than including diagnoses made several months or years after they had been discharged from hospital.

7.3.2 Outcome variable: Mental Health Act Status

- Mental Health Act data appears in structured fields in CRIS and includes start and end date of the section, and the section type. In my study, I included all young people who had been placed on a section 2 or 3 of the MHA at any point in their inpatient admission. This is in line with the only other previous study which used CRIS to look at MHA use in children and adolescents.[222] Section 2 of the MHA is used primarily for assessment but can be used for treatment too and lasts for 28 days. After this time, the patient would need to remain in hospital voluntarily, be discharged, or placed on a Section 3.
- Section 3 of the MHA is used for treatment and lasts up to 6 months initially, with the option of renewal an unlimited number of times.

Both sections 2 and 3 require a full MHA assessment (an assessment with two doctors and an Approved Mental Health Practitioner (AMHP)). I excluded the use of the inpatient 'holding sections', section 5.2 (which can be given by one doctor and last up to 72 hours) and section 5.4 (which can be given by a nurse and lasts up to 6 hours), as well as section 4 (which is given by one doctor and an AMHP in the community in an emergency and lasts up to 72 hours) as these are short term, emergency powers which would be converted to a section 2 or 3 following a MHA assessment, if this was thought to be appropriate. I also excluded the MHA Part III sections (concerning criminal proceedings) as these are mainly used in the secure services, rather than the general adolescent inpatient units and have different pathways into them (ie. They are all via the justice system). Finally I also excluded at this stage the use of the police sections 135 and 136 (which enable police to transfer someone from their home or a public place to a place of safety and last 24 hours) as well as Community Treatment Orders (CTOs), which allow people to be recalled into hospital from the community if the conditions

of their discharge are broken, as these would all be converted to a section 2 or 3 if the person needed to be admitted to hospital. Young people not admitted under either a section 2 or 3 of the MHA are referred to as 'voluntary', even though it is possible that some of these admissions may have occurred under parental consent. Defining involuntary and voluntary hospitalisation in terms of the use of mental health legislation, rather than on whether or not the young person consented to the admission, as well as exclusion of the inpatient holding and emergency sections, is consistent with definitions in previous national and international literature in this field (please see section 5.4 above).

7.3.3 Exposure variables

- Clinical factors

1. Diagnosis

Psychiatric diagnosis was extracted from the structured primary diagnosis fields, based on ICD-10 codes. I used the following, standard ICD-10 classifications:

F00-F09 – Organic disorders

F10-F19 – Substance use disorders

F20-F29 – Schizophrenia

F30-F39 – Mood disorders (including mood disorders with psychosis)

F40-F49 – Neurotic, stress-related and somatoform disorders

F50-F59 – Behavioural syndromes, including eating disorders

F60-F69 – Personality disorders

F70–F79 - Intellectual disability

F80-F89 - Developmental conditions (including autism spectrum condition)

F90-F98 - Behavioural and emotional disorders with onset usually occurring in childhood/adolescence (including ADHD, and oppositional defiant disorder)

F99 – Unspecified mental disorder

In this analysis, I included only the primary diagnosis which was recorded closest to the index admission date within 28 days prior to the hospital admission, or 28 days afterwards. If several primary diagnoses were recorded, the one given nearest to the date of admission was chosen. The time period of 28 days before and after the admission was chosen based on methodology in previous literature, alongside discussions with SLaM clinicians and CRIS researchers.[274] It aims to ensure that the diagnoses recorded are associated with the inpatient admission itself rather than including diagnoses that were given more than a month before the inpatient admission or given in the time since the young person was discharged from hospital.

2. Severity of impairment: Children's Global Assessment Scale (CGAS)

The Children's Global Assessment Scale (CGAS) is one of the standardised clinical assessment tools with the greatest coverage in SLaM CAMHS. A previous study with a CAMHS cohort from CRIS found that 93% (11,661) of the sample had a CGAS score recorded.[274] The CGAS is a clinician-rated scale with good psychometric proprieties, which measures the extent of a child's impairment.[275] Higher scores indicate better functioning (range = 1–100), with anything above 70 described as being in the normal range.[275] The CGAS score is recorded in structured fields in CRIS and there is an expectation that CGAS scores will be given following a new contact with SLaM child and adolescent services. CGAS scores were only included in my analysis if they had been recorded in the 28 days before or after the admission to ensure that these related to the inpatient admission and not presentations which occurred either before or afterwards.

3. Risk to self and others

Perceived risk to self and to others was extracted from structured fields as well as from free text using an NLP application. For risk to self, SLaM risk assessment proformas (both full and brief risk assessments) were used to identify any record of self-harm, non-suicidal self-injury, suicide attempt or suicidal ideation in the 28 days before the admission. An NLP application which has been developed and validated to identify references to self-harm/suicide ideation/threat in adolescents was also used to identify if there was any suicidal ideation in this time period recorded in the free text.[267] Risk to others was identified through risk assessment performa only and included any record of risk to others, violence towards others

and dangerous behaviour to others in the 28 days prior to admission. There is an NLP app in development to identify aggressive behaviour, but it has not yet been validated on the child and adolescent population and was not used in my analysis.

In the clinical risk performa, risk is recorded as high, moderate, low, or none/don't know. The NLP app to identify records of suicidal ideation uses a 3-point scale: positive, negative or unknown. For ease of interpretation and to ensure adequate numbers in each category, these categories were converted to binary variables (moderate, high or positive = risk present; and low, none, negative and don't know/unknown = risk not present). I did not include any risk recorded after the admission date as these could be recording behaviours that had occurred as a result of the admission itself or because of factors on the inpatient units themselves (eg. lack of permanent staff), which can potentially contribute to the risk of violent incidents. [276]

- Sociodemographic factors

1. Gender

Gender was measured from structured fields in CRIS. At the current time, CRIS primarily uses mutually exclusive 'male', 'female' and 'other' classifications. Due to lack of clarity about what the 'other' category might mean, as well as small numbers in this group, anyone without a male/female gender recorded were excluded from the analysis (n = 16).

2. Age at admission

Age at admission was calculated from date of birth and date of the hospital admission. This was divided into three groups, child (<12), young adolescent (13-15), older adolescent (16-18) to reflect the SLaM inpatient age cut offs, as well as the relevant legal age boundaries (for example, the MCA 2005 only applies to young people aged 16 and over).

3. Ethnicity

Ethnicity is a complex, multifaceted term which can be informed by someone's race, language, religion, place of birth, and shared traditions. It is personal to each individual and can change over time and should therefore, always be reported by the person themselves. In the SLaM electronic health records, patient ethnicity is intended to be self-ascribed, although in practice, it may sometimes be assumed and ascribed by the clinician or other staff member completing the record. CRIS aggregates recorded ethnicity in structured fields into 16

categories. Due to concerns about the risk of inadvertent de-anonymisation which can occur when using detailed ethnicity data in research where the sample size is limited (for example as it is in this study by only including people under 18), I further aggregated ethnicity into five categories based on the Office of National Statistics recommended broad ethnic groupings. (Table 7.1) Anyone without ethnicity data recorded was excluded (n = 168). The practical and ethnical challenges of using ethnicity data from electronic health records, which is often not self-ascribed and aggregated into heterogeneous groups, is further explored in the discussion at the end of Section 3 (chapter 9).

SLaM electronic health record ethnic categories	Ethnic categories supplied from CRIS	Ethnic categories used in my analysis
British	British	White
English		
Scottish		
Welsh		
Irish	Irish	
Irish Traveller		
Albanian	Any other White Background	
All former USSR Republics		
Bosnian		
Croatian		
Cypriot		
Greek		
Greek Cypriot		
Gypsy/Romany		
Kosovan		
Kurdish		
Other former Yugoslavia		
Other White Unspecified		
Other White/Mixed European		
Portuguese		
Serbian		
Traveller		
Turkish		
Turkish Cypriot		
White and Black Caribbean	White and Black Caribbean	Mixed or multiple ethnicity
White and Black African	White and Black African	
White and Asian	White and Asian	
Asian and Chinese	Any other mixed background	
Black and Asian		

Black and Chinese		
Black and White		
Chinese and White		
Indian/British Indian	Indian	Asian/Asian British
Pakistani/British Pakistani	Pakistani	
Bangladeshi/British Bangladeshi	Bangladeshi	
Chinese	Chinese	
British Asian	Any other Asian background	
Caribbean Asian		
East African Asian		
Mixed Asian		
Other Asian Unspecified		
Sinhalese		
Sri Lankan		
Tamil		
Caribbean	Caribbean	Black/African/Caribbean/Black British
Algerian	African	
Angolan		
Eritrean		
Ethiopian		
Ghanaian		
Nigerian		
Somali		
Sudanese		
Ugandan		
Other African		
Mixed Black	Any other Black background	
Black British		
Other Black Unspecified		
Any other group	Any other ethnic group	Other ethnic group
Arab		
Columbian		
Ecuadorian		
Filipino		
Iranian		
Iraqi		
Japanese		
Malaysian		
Middle Eastern		
Other Latin American		
Vietnamese		
Not stated	Not stated	Not known

Table 7.1: Ethnic categories in SLaM electronic health records, CRIS and my analysis

4. Deprivation

The indices of multiple deprivation (IMD) are the official government-issued measures of relative deprivation for small areas in England, ranking every small area from 1 (most deprived) to 32,844 (least deprived). The decile closest to the address where the young person was living at the time of their admission to hospital was used to calculate the level of deprivation. The IMD rankings have changed several times over the duration of the study, and this was appropriately adjusted for in my analysis: 2007 deciles were used for admissions between 2007 and 2009; 2010/11 deciles for admissions from 2011 to 2014, 2015 deciles for admissions that occurred between 2015 and 2018, and finally deprivation deciles 2019 for admissions between 2019 to 2021. While the decile data is presented in full in the cohort description table, in the full analysis this has been collapsed into quartiles (most deprived to least deprived) to ensure adequate numbers in each group.

7.3.4 Statistical analysis

I initially conducted univariate logistic regression to investigate the associations between the clinical factors (diagnosis, illness severity, risk) and social factors (gender, age, deprivation level, ethnicity) with the use of the MHA (outcome). I then conducted multivariate analyses to investigate associations between the sociodemographic and clinical factors and involuntary hospitalisation.

All analysis was conducted in Stata 15.

7.3.5 Ethics

Approval for this project was obtained from the service user-led CRIS oversight committee (19-066). Given the use of routinely collected data, active patient consent for publication is not required. Data from people who chose not to share their health data for research (national data opt-out) were excluded from the study at source, so I do not know how many people were excluded nor any details about them. On a national level, the National data-opt out rate is around 1% for those aged 9 and under and is 3% for those aged 10 to 19.[277]

7.4 Results

7.4.1 Sample

The total number of patients with a first completed admission to a SLaM inpatient unit between 1/1/2007 and 31/5/2021 was 27336 and of these, 2310 were aged under 18. When those under 18 without a recorded gender (n=16) or ethnicity (n=128) were excluded, as well as 1 person who was erroneously recorded as having been admitted after their date of discharge, the total sample included in this study was 2165. The minimum age was 6.04 and the maximum age was 17.99. More than half of the sample were aged 16-17 (51.13%) and the mean age at the time of admission was 15.53 (SD 2.13). 60.32% of the cohort were female. In terms of ethnicity, 66% of the sample was White, 19% Black or Black British, 6% Asian or Asian British, 7% Mixed or multiple ethnicity and 3% Other ethnic group. The most prevalent diagnoses in the sample were mood disorders (22%) and anxiety/neurotic disorders (20%) followed by psychotic disorders (12%). 82% of the sample were reported to present a risk to themselves at the time of admission, and 31% were reported as presenting a risk to others. 527 young people (approximately 24%) were placed under a MHA section 2 or 3 at some point during their admission. 455 young people had been on a section 2 and 204 had been on a section 3 (132 young people had been on both).

Table 7.2: Description of cohort

	N (total = 2165)	%
Gender		
Male	905	39.68
Female	1389	60.32
Ethnicity		
White	1419	65.54
Black, Black British	404	18.66
Asian or Asian British	128	5.91
Mixed or multiple ethnicity	141	6.51
Other ethnic group	73	3.37
Age		
6-12	261	12.06

13-15	797	36.81
16-17	1107	51.13
Deprivation (deciles)	N=2062	
Most deprived	117	5.40
2nd	358	16.54
3rd	314	14.50
4th	272	12.56
5th	226	10.44
6th	156	7.21
7th	178	8.22
8th	170	7.85
9th	154	7.11
Least deprived	117	5.40
Primary Diagnosis	N=2134	% with disorder vs those without
Organic disorder	12	0.55
Substance use disorder	85	3.93
Schizophrenia	260	12.01
Mood disorder	477	22.03
Anxiety/neurotic	435	20.09
Behavioural (Eating)	166	7.67
Personality disorder	80	3.70
Developmental disorder	159	7.34
Conduct/ADHD	176	8.13
Diagnosis unspecified	284	13.12

CGAS score at admission	N=1823	
Extremely impaired (1-10)	56	3.07
Very severely impaired (11-20)	115	6.31
Severe problems (21-30)	211	11.57
Serious problems (31-40)	827	45.36
Obvious problems (41-50)	421	23.09
Some noticeable problems (51 -60)	149	8.17
Some problems (61-70)	37	2.03
Doing alright (71-80)	7	0.38
Doing well (81-90)	0	-
Doing very well (91-100)	0	-
Record of risk to self at admission	N=2165	
Yes	1780	82.22
No	385	17.78
Record of risk to others at admission	N=2165	
Yes	676	31.22
No	951	43.93
Undetermined	538	24.85
MHA s2 or s3 used during admission	N=2165	
Yes	527	24.34
No	1638	75.66

Deprivation scores were missing for n=103 (4.76%) Diagnosis was missing for n=31 (1.43%) CGAS scores were missing for n= 342 (15.80%)

7.4.3 Univariate logistic regression

On unadjusted analysis, young people with a diagnosis of schizophrenia had more than 4 times the odds of being detained under the MHA during their admission than young people without this diagnosis (OR 4.57, 95% CI 3.50 – 5.98, p=<0.001). Those with a diagnosis of substance misuse or organic disorder (although there were very small numbers in this latter group) were also more likely to have experienced involuntary than voluntary treatment. However, those with an anxiety disorder were less likely to be admitted involuntarily than those without an anxiety disorder (OR 0.48, 95% CI 0.36 – 0.64, p= <0.001).

Children and adolescents with higher CGAS scores (moderately and least impaired) were less likely to have been detained under the MHA than those with lower scores (most impaired). While a very high number of the young inpatients were recorded as presenting a risk to themselves at the time of the admission (82%), this was not associated with an increased odds of being detained under the MHA. However, children or adolescents who were reported as posing a risk to others at the time of their admission were more likely to have been treated involuntarily than those who were not thought to be a risk to others (OR 1.69 95% CI 1.35 – 2.12, p=<0.001).

Females were less likely to have been placed under a section 2 or 3 during their admission than males (OR 0.64, 95% CI 0.52 – 0.78, p=<0.001). Older children and adolescents were more likely to have been detained under the MHA than younger children. Only 8% of children aged 6-12 were detained, compared to 23% of those aged 13-15 and 29% of those aged 16 and 17.

In terms of ethnicity, the lowest rates of involuntary care were seen in young people from White groups (18%) and the highest in those from Black/Black British groups (42%), and 'Other ethnic groups' (36%). With the exception of those from mixed or multiple ethnic groups, all non-White groups were more likely to have been detained under the MHA than those from White groups. Young people from Black/Black British groups had more than 3 times the odds of being under the MHA at some point during their admission, than those from White groups (OR 3.27, 2.58 – 4.15 p=<0.001).

Young people with a home address in the most deprived areas at admission were almost twice as likely to be detained under the MHA than those from the least deprived area (OR 1.93, 95% CI 1.38 – 2.71, p=<0.001).

Table 7.3: Comparison of patients treated involuntarily and voluntarily with crude and adjusted odds of involuntary hospitalisation

	No MHA n (%) Total = 1638 (75.66%)	MHA 2 or 3 during admission n (%) Total = 527 (24.34%)	Crude odd ratio MHA (95% CI)	Adjusted odds ratios[a]
Gender				
Male	606 (71)	253 (29)	*Reference*	*Reference*
Female	1032 (79)	274 (21)	**0.64 (0.52 – 0.78) p=<0.001***	0.83 (0.64 – 1.08) p=0.174
Ethnicity				
White	1159 (82)	260 (18)	*Reference*	*Reference*
Black, Black British	233 (58)	171 (42)	**3.27 (2.58 – 4.15) p=<0.001***	**2.14 (1.60 – 2.89) p=<0.001***
Asian or Asian British	91 (71)	37 (29)	**1.8 (1.21 -2.72) p=0.004***	1.23 (0.75 – 2.04) p=0.414
Mixed or multiple ethnicity	108 (77)	33 (23)	1.36 (0.91 – 2.06) p=0.14	1.40 (0.88 – 2.22) p=0.156
Other ethnic group	47 (64)	26 (36)	**2.47 (1.50 – 4.06) p=<0.001***	1.63 (0.90-2.92) p=0.105
Age				
6-12	241 (92)	20 (8)	*Reference*	*Reference*
13-15	610 (77)	187 (23)	**3.69 (2.28-6.00) p=<0.001***	**5.88 (3.46 – 10.03) p=<0.001***
16-17	787 (71)	320 (29)	**4.90 (3.05 – 7.87) p=<0.001***	**6.72 (3.97 – 11.41) p=<0.001***
Deprivation				

Least deprived	275 (79)	74 (21)	*Reference*	*Reference*
2nd	294 (81)	71 (19)	0.90 (0.62 - .29) p=0.56	0.75 (0.51 – 1.10) p=0.143
3rd	271 (74)	93 (26)	1.28 (0.90 – 1.80) p=0.17	0.82 (0.56 – 1.21) p=0.321
4th	259 (75)	86 (24)	1.23 (0.90 – 1.75) p=0.25	0.82 (0.55 – 1.20) p=0.304
Most deprived	227 (65)	118 (34)	**1.93 (1.38 – 2.71) p=<0.001***	1.23 (0.84 – 1.79) p=0.287
Diagnosis				
Organic disorder (vs no organic disorder)	<10	<10	**4.40 (1.39-13.91) p=0.012***	2.69 (0.71 – 10.15) p=0.145
Substance use disorder (vs no substance use disorder)	46 (54)	39 (45)	**2.76 (1.78-4.29) p= <0.001***	1.70 (0.99 – 2.89) p=0.052
Schizophrenia (vs no schizophrenia)	120 (46)	140 (54)	**4.57 (3.50 – 5.98) p=<0.001***	**2.63 (1.83 – 3.76) p = <0.001***
Mood disorder (vs no mood disorder)	364 (76)	113 (24)	0.96 (0.75- 1.21) p=0.71	1.09 (0.81 – 1.49) p=0.544
Anxiety/neurotic (vs no anxiety/neurotic disorder)	370 (85)	65 (14)	**0.48 (0.36 – 0.64) p= <0.001***	**0.58 (0.41 – 0.82) p=0.002***
Behavioural (Eating) (vs no behavioural disorder)	136 (82)	30 (18)	0.67 (0.44 – 1.00) p=0.05	1.13 (0.70 – 1.85) p= 0.615
Personality disorder (vs no personality disorder)	66 (83)	14 (18)	0.65 (0.36-1.17) p= 0.15	0.76 (0.40 – 1.45) p=0.409

Developmental disorder (vs no developmental disorder)	113 (71)	46 (29)	1.29 (0.90 – 1.85) p=0.16	**1.60 (1.04 – 2.47) p=0.033***
Conduct/ADHD (vs no conduct disorder/ADHD)	133 (76)	43 (24)	1.01 (0.70 – 1.44) p= 0.98	1.22 (0.80 – 1.85) p=0.344
CGAS score				
Most impaired (CGAS Score 1-31)	399 (65)	218 (35)	*Reference*	*Reference*
Moderately impaired (CGAS score 32-40)	470 (77)	140 (23)	**0.55 (0.42-0.70) p=<0.001***	**0.56 (0.42 – 0.74) p=<0.001***
Least impaired (CGAS score 41-80)	545 (82)	116 (18)	**0.39 (0.30 – 0.51) p=<0.001***	**0.41 (0.30 – 0.54) p=<0.001***
Risk				
To self (vs no risk to self)	1354 (76)	426 (24)	0.88 (0.69 – 1.14) p=0.34	1.16 (0.83 – 1.61) p = 0.381
To others (vs no risk to others)	468 (69)	208 (31)	**1.69 (1.35 – 2.12) p=<0.001***	1.31 (0.99 – 1.74) p=0.061

Note: N=2165.

[a]*The multivariate analysis adjusted for all variables in this table.*

7.4.4 Multivariate logistic regression

On fully adjusted multivariate regression analyses, a diagnosis of schizophrenia, more severe impairment (lower CGAS scores) and being aged 13-15 and 16-17 as opposed to being 12 or under remained strongly associated with involuntary rather than voluntary hospitalisation. Female gender, living in the most deprived areas and being from an Asian or Other ethnic group were no-longer associated with involuntary hospitalisation on adjusted analysis.

There is a weak association between a diagnosis of a developmental disorder and involuntary hospitalisation which is not present in the unadjusted analysis but emerges on adjusted analysis. Being from a Black, rather than a White ethnic group remained strongly associated with involuntary hospitalisation (OR 2.14 95% CI 1.60 – 2.89, p=<0.001*) when adjusting for age, gender, diagnosis, severity of illness, risk and level of deprivation.

7.4.5 Missing data

The levels of missing data are reported at the bottom of table 7.1 and for most variables are small (less than 5%). However, 15% of the CGAS scores at admission were missing. In order to understand whether there was any ethnic discrepancy in the reporting of CGAS scores, which might have impacted on the findings I looked at CGAS data and ethnicity. 84.19% of the inpatients from White groups had a CGAS completed at admission and 89.40% of the inpatients from Black groups. This difference is not significant ($X^2 = 2.87$, p=0.092).

7.5 Discussion

In this chapter I have described the largest UK study to date comparing children and adolescents who have been admitted to psychiatric inpatient units either voluntarily or involuntarily. This large historical cohort of child and adolescent inpatients in southeast London over a 13-year period were identified using CRIS. As hypothesized, I found that older adolescence, a diagnosis of schizophrenia and greater illness impairment (identified through CGAS scores) were all associated with an increased odds of involuntary rather than voluntary hospitalisation in this cohort. The association between involuntary hospitalisation and a diagnosis of developmental disorder which emerges on adjusted analysis, may be a data anomaly, but does reflect a growing concern that young people with autism may be being detained under the MHA too frequently.[278] This will need further investigation in a larger sample of children and adolescents. As the MHA is designed to be used to provide care for those with the most severe/impairing mental illnesses who are unable to make decisions about care or treatment themselves, the association of schizophrenia, older age, and more severe illness with involuntary hospitalisation among children and adolescents seems clinically plausible and corresponds with the findings from my systematic review presented in chapter 5. Schizophrenia can be one of the most severe mental illnesses and is often associated with difficulties recognizing the symptoms or need for treatment. With respect to

age, the risk of more severe mental illness increases through adolescence. In addition, the MHA code of practice as well as the MHA itself are clear that people aged 16 or over should not normally be admitted to hospital under parental consent, which means that the MHA is likely to be used more often in this group as the legal framework to admit and treat.

Also as hypothesised, being from a Black rather than White ethnic group was strongly associated with involuntary over voluntary hospitalisation in this cohort of young inpatients from South East London, and this association remained even after adjusting for age, gender, diagnosis, severity of illness, risk and level of deprivation. To my knowledge, this has not been previously shown in a sample of child and adolescent inpatients. Identifying ethnicity using clinical records, which are potentially non-self-ascribed, and then further reducing ethnic categories to five non-homogenous groups in order to conduct the analysis is clearly problematic and is addressed further in the discussion chapter 9. However, the finding that young people from Black groups are more than twice as likely than those from White groups to have an involuntary over voluntary admission corresponds with my findings in the systematic review (presented in chapter 5), and also corresponds with consistent evidence of racial inequity in the use of involuntary treatment in the adult literature.[11] It suggests that further investigation into the links between ethnicity and involuntary hospitalisation of children and adolescents is urgently needed.

Further discussion, including the strengths and limitations of this study will occur in chapter 9. A full discussion of the potential clinical and policy implications will occur in the final thesis discussion in chapter 10.

7.6 Conclusion

My findings from this study have indicated that children and adolescents from Black groups are more likely to be subject to an involuntary than voluntary hospitalisation than those from White groups, even after taking into account other sociodemographic factors, their diagnosis, the severity of their illness and the presence of risk. In the study described in the next chapter, I investigate the association between involuntary hospitalisation and service level factors including pathways into care and use of mental health services, among children and adolescents.

Chapter 8: An investigation of the association between pathways to care and service use and involuntary hospitalisation among children and adolescents

8.1 Chapter summary

This chapter describes my second CRIS study looking at the use of the Mental Health Act in children and adolescents. In this study, I investigate how service level-factors, including pathways into care and time known to services prior to admission are associated with Mental Health Act use among children and adolescents. Using the cohort identified in the previous chapter, but excluding the young people who were not living in the SLaM catchment at the time of admission (whose use of outpatient services prior to their inpatient admission I could not capture in CRIS), I compared those who had been placed under a section 2 or 3 of the MHA during their admission, with those who had been in hospital voluntarily throughout. Logistic regression was used to investigate the associations between clinical factors (psychiatric diagnosis, risk to self and others, severity of illness), social factors (gender, age, ethnicity, deprivation level), service level factors (referral source, time known to SLaM, appointment in the 28 days before admission, having been on a police section, and having a care plan in place in the 12 months before admission) and involuntary rather than voluntary treatment. I begin by presenting the sample, the new variables used, the analysis and then a summary of the findings.

8.2 Introduction

The findings from the study described in the previous chapter and my systematic review have suggested that children and adolescents from Black groups are more likely than their White peers to be subject to an involuntary than voluntary hospital admission, and that this could not be explained by other sociodemographic factors (gender, age, deprivation level) or clinical factors (diagnosis, severity of illness or risk). Ethnic differences in pathways into and use of secondary mental health services are regularly cited as factors which likely contribute to the racial disparities in use of involuntary treatment, although supporting evidence is often controversial or lacking. [11,279] While there is strong evidence that people from Black African and Black Caribbean groups have more adverse pathways into mental health services,[13] the evidence on inequalities in service use is mixed.[191,280,281] In addition, very little research has focused on inequalities in access and use of mental health services in young people.[282] Associations between service-use and involuntary hospitalisation were not reported in any of

the studies included in my systematic review of factors associated with involuntary hospitalisation among children and adolescents. Therefore, in this final study, I used CRIS to investigate how service-level factors, including pathways into and use of outpatient mental health services prior to inpatient admission may impact on the likelihood of MHA use. Secondly, I wanted to understand whether these service-level factors might help to explain the ethnic differences in involuntary hospitalisation identified in the previous study. I hypothesised that young people with more adverse pathways into secondary mental health services (such as via police or emergency services), and those who had not had access to outpatient mental health services prior to their hospital admission would be more likely to have an involuntary than voluntary hospitalisation. As this is the first study to investigate the associations between ethnicity, mental health service use and involuntary hospitalisation among children and adolescents I did not formulate a hypothesis about the association between ethnicity and involuntary hospitalisation once adjusting for these service-level factors.

8.3 Methods

8.3.1 Cohort selection

For this study I used the same cohort of children and adolescent inpatients as the previous study, but excluded the young people who did not have an address or a GP in the SLaM catchment (Lambeth, Lewisham, Croydon, and Southwark) at the time of their inpatient hospital admission. This was done to ensure that I could capture all contact with outpatient services prior to the hospital admission. For example, the details of outpatient contact for someone who had been under the care of another NHS mental health trust before coming to SLaM for inpatient treatment would likely be contained in the electronic health records in summary form in clinic letters or progress notes. Someone who had been accessing SLaM outpatient services, however, would have information on the type of appointment and date accessed recorded in structured fields. Information about previous outpatient treatment in progress notes/letters was not available with the CRIS search I conducted, while the outpatient records from structured fields was accessible.

I also reduced the time period for inclusion into the study from all those who were inpatients in SLaM from 1/1/07 to all those who were inpatients in SLaM from 1/1/08. This is because

CRIS records only go back to January 2007, and by including those admitted to hospital in January 2007, it would not be possible to know from the data in CRIS whether or not they had accessed SLaM outpatient services in the 12 months prior to their admission.

8.3.2 Outcome variables

The outcome variable of interest, as before, was the use of section 2 or section 3 of the MHA at any point during the inpatient admission.

8.3.3 Exposure variables

I used the same social and clinical variables as before: gender, age, ethnicity, deprivation level, diagnosis, CGAS scores, and the presence of risk to self or others (see Chapter 7.2).

I also added the following service level variables which were decided upon based on previous literature and clinical consensus:

Referral pathways into SLaM services

In CRIS the source of the initial referral into SLaM services is recorded in structured fields. In this child and adolescent cohort, there were 16 possible referral sources: GP, Child health, midwife, NHS direct telephone or other electronic access service, other clinical specialty, other mental health trust, Accident and emergency department, SLaM social services, non-SLaM social services, Police, courts, youth justice services, medium or high security units, School, education services, carer, self, or other. For ease of interpretation and to ensure adequate numbers in the analysis, I collapsed these into the following 6 categories, in line with previous research in this field: [282]

- Non-emergency health services (GP, Child health, midwife, NHS direct telephone or other electronic access service, other clinical specialty, other mental health trust)
- Emergency health services (Accident and emergency department)
- Social services (SLaM social services, non-SLaM social services)
- Police and legal services (Police, courts, youth justice services, medium or high security units)
- Education services (School, education services)
- Other (carer, self, other)

Time known to SLaM services prior to the admission

In order to understand how long the young people had been known to SLaM services prior to the inpatient admission, the first contact with SLaM services was identified and the time between this and the hospital admission was calculated and then categorised into the following five groups: those who had been known to SLaM for 12 months or more, 6-11 months, 1-5 months, 1-31 days prior to the admission and those who had not been known to SLaM until their inpatient admission (0 days).

Contact with outpatient services in the month prior to admission

There is some evidence that recent contact with outpatient services is associated with reduced likelihood of involuntary hospitalisation.[191] Contact with outpatient services in the month before admission was measured by identifying the most recent appointment with any SLaM outpatient service and calculating whether this occurred in the 28 days prior to the hospital admission. This was then recorded as a binary variable.

Previous detention under a police section 135 or 136

As police involvement in admission has been associated with increased risk of involuntary hospitalisation,[13] using structured fields, I identified the young people who had been placed on a 'Police section' (a section 135 or section 136 of the MHA) in the 12 months prior to the index admission. A section 135 allows the police to remove someone with suspected mental health problems from their home to a place of safety and lasts 24 hours. Section 136 allows the police to remove someone with suspected mental health problems from a public place to a place of safety, and also lasts 24 hours. Detention under a section 135 or 136 triggers a MHA assessment and could result in either a detention under a section 2 or 3 of the MHA, agreement on the part of the young person and/or their parents to come into hospital voluntarily, or discharge home.

Care plan created in the 12months prior to the admission

There is some evidence that advance care planning (or crisis planning) can be associated with a reduced risk of coercive care in future.[283] It was not possible to search accurately in CRIS for evidence of a crisis plan having been made, but completion of a care plan is recorded in

structured fields and includes the date of completion. I identified all records where the care plan had been completed in the 12 months prior to the hospital admission.

8.4 Results

8.4.1 Sample

The original cohort of all child and adolescent inpatients in SLaM from 1/1/2007 to 31/5/21, was 2165. Within this original cohort there were 1383 young people who did not have an address or a GP in the catchment at admission. There were a further 56 young people who were admitted prior to 1/1/2008.

Therefore, the total number of young inpatients with who were living in or had a GP in the SLaM catchment at admission and were in hospital over a 12-year period (1/1/08 to 31/5/2021) was 652.

As expected from the census data presented in Chapter 6, the proportion of people from Black African, Black Caribbean and Black British groups were much higher in this cohort from the SLaM catchment area (33.28%) than in the full cohort of inpatients (18.66%). There were also more people in the 5 most deprived groups in the SLaM catchment cohort than in the initial cohort. Like in the full cohort the most prevalent diagnosis was mood disorder. The proportion of young people who had been detained under a section 2 or section 3 of the MHA in the SLaM only cohort was almost 30%, while in the full cohort it was 24%. (Table 1)

Table 8.1. Cohort Description

People in catchment at index	N = 652	%
Gender	N=652	
Male	293	44.94
Female	359	55.06
Ethnicity	N=652	
White	291	44.63
Black, Black British	217	33.28
Asian or Asian British	48	7.36
Mixed or multiple ethnicity	66	10.12

Other ethnic group	30	4.60
Age	N=652	
6-12	63	9.66
13-15	232	35.58
16-17	357	54.75
Deprivation (deciles)	N=648	
Most deprived	40	6.17
2nd	171	26.39
3rd	166	25.62
4th	97	14.97
5th	74	11.42
6th	38	5.86
7th	22	3.40
8th	25	3.86
9th	11	1.70
Least deprived	<10	<1
Primary Diagnosis		% with disorder vs those without
Organic disorder	<10	<1%
Substance use disorder	34	5.21
Schizophrenia	119	18.25
Mood disorder	153	23.47
Anxiety/neurotic	125	19.17
Behavioural (Eating)	30	4.60
Personality disorder	36	5.52
Developmental disorder	53	8.13
Conduct/ADHD	61	9.36

CGAS score at admission	N=559	
Extremely impaired (1-10)	16	2.86
Very severely impaired (11-20)	40	7.16
Severe problems (21-30)	87	15.56
Serious problems (31-40)	246	44.01
Obvious problems (41-50)	124	22.18
Some noticeable problems (51 -60)	33	5.90
Some problems (61-70)	11	1.97
Doing alright (71-80)	<5	<1
Doing well (81-90)	0	0
Doing very well (91-100)	0	0
Record of risk to self at admission	N=652	
Yes	535	82.06
No	117	17.94
Record of risk to others at admission	N=652	
Yes	291	44.63
No	226	34.66
Undetermined	135	20.71
MHA s2 or s3 as an inpatient	N=652	
Yes	194	29.75
No	458	70.25
Referral Source	N=632	
Non-emergency health services	271	41.56

Emergency health services	179	27.45
Social services	26	3.99
Police/legal services	15	2.30
Education services	48	7.36
Other	93	14.26
Time known to SLaM prior to admission	N = 651	
0 days	22	3.37
1-31 days	130	19.94
1-5 months	125	19.17
6-12 months	60	9.20
>12 months	314	48.16
Most recent SLaM appointment in 28 days before admission	N=652	
Yes	577	88.50
No	75	11.50
S136 in 12 months prior to admission	N=652	
Yes	29	4.45
No	623	95.55
Care plan in 12 months before admission	N=652	
Yes	239	36.66
No	413	63.34

N = 652. Deprivation level missing = 4 (0.6%), CGAS on admission missing = 93 (14.3%), Referral source missing = 20 (3.1%)

In terms of service use, most of the young patients were referred into SLaM services by non-emergency health services (41%). The next most common source of referral was the emergency services (27%). Almost half of the patients had been known to SLaM for a year or

more prior to the admission, and only 3% had never been known to SLaM prior to their admission. Almost 90% had had an appointment with a SLaM outpatient service in the 28 days before their admission. None of the young people had been placed on a section 135 of the MHA, but a small number (4%) had been on a section 136 of the MHA. Just over a third had a care plan which had been made in the year prior to admission.

8.4.2 Univariate logistic analysis

- Sociodemographic and clinical factors

On unadjusted analysis, in this cohort of inpatients the odds of an involuntary rather than voluntary hospitalisation was more than three times greater for those from a Black rather than White ethnic group (OR 3.72 95% CI 2.51 – 5.52, p = <0.001). Older adolescence and male gender were also associated with involuntary rather than voluntary care, but deprivation level was not. Someone with a diagnosis of schizophrenia has more than five times the odds of involuntary care than someone without this diagnosis (OR 5.40 95% CI 3.55 – 8.23, p = <0.001). A diagnosis of substance misuse disorder was also associated with involuntary care, whilst anxiety and personality disorder were more likely to be associated with voluntary hospitalisation. More severe illness as measured by the CGAS was associated with involuntary care as was the presence of risk to others. In this cohort, despite being one of the criteria for use of the MHA, reported risk to self was more likely to be associated with a voluntary rather than involuntary admission but this did not remain significant on adjusted analysis.

- Service level factors

Neither time known to SLaM prior to the inpatient admission nor having had an appointment in the 28 days before the admission, seemed to impact on the likelihood of voluntary or involuntary hospitalisation. However, having been on a section 136 in the year before, and having been referred into SLaM mental health services by emergency services, social services or police/justice system, were all associated with increased odds of involuntary over voluntary care. Having a care plan in place reduced the likelihood of involuntary admission, but this effect was attenuated on adjusted analysis.

8.4.3 Multivariate logistic analysis

As had been found in the larger study described in the previous chapter, on adjusted analysis, Black ethnicity, older age, a diagnosis of schizophrenia and more severe CGAS scores were the only sociodemographic and clinical factors associated with involuntary rather than voluntary hospitalisation when adjusting for all of the other potentially explanatory factors. In terms of service use, having been placed on a section 136 in the year before admission, and having been referred into SLaM mental health services by social care or police/criminal justice system were all associated with involuntary rather than voluntary care after adjusting for all the other sociodemographic, clinical, and service-level factors.

Table 8.2: Main analysis including only those in SLaM catchment at admission (n=652)

For people in catchment only	No MHA n (%)	MHA 2 or 3 during admission n (%)	Unadjusted odds of MHA (95% CI)	Adjusted odds[a]
Gender				
Male	176 (60.07)	117 (39.93)	Reference	Reference
Female	282 (78.55)	77 (21.45)	**0.41 (0.29 – 0.58) p = <0.001***	0.64 (0.38 – 1.06) p = 0.085
Ethnicity				
White	235 (80.76)	56 (19.24)	Reference	
Black, Black British	115 (53.00)	102 (47.00)	**3.72 (2.51 – 5.52) p = <0.001***	**2.04 (1.19 – 3.50) p = 0.010***
Asian or Asian British	36 (75.00)	12 (25.00)	1.39 (0.68– 2.86) p = 0.351	0.60 (0.21 – 1.72) p = 0.575
Mixed or multiple ethnicity	51 (77.27)	15 (22.73)	1.23 (0.65 – 2.35) p = 0.523	1.03 (0.45 – 2.36) p = 0.939
Other ethnic group	21	<10	1.80 (0.78 – 4.14) p = 0.168	0.62 (0.19 – 2.08) p = 0.445
Age				
6-12	57	<10	Reference	Reference

13-15	179 (77.16)	53 (22.84)	**2.81 (1.15 – 6.89) p = 0.024***	**4.46 (1.57 – 12.72) p = 0.005***
16-17	222 (62.18)	135 (37.82)	**5.78 (2.43 – 13.76) p = <0.001***	**8.67 (3.08 – 24.41) p = <0.001***
Deprivation	N=648			
Least deprived	26	<10	Reference	Reference
2nd	63 (79.75)	16 (20.25)	0.94 (0.35 – 2.56) p = 0.909	1.05 (0.27 – 4.10) p = 0.936
3rd	110 (72.85)	41 (27.15)	1.38 (0.56 – 3.43) p = 0.483	0.75 (0.21 – 2.61) p = 0.656
4th	140 (71.07)	57 (28.93)	1.51 (0.62 – 3.68) p = 0.362	0.78 (0.23 – 2.68) p = 0.696
Most deprived	118 (62.77)	70 (37.23)	2.20 (0.91 – 5.34) p = 0.08	1.34 (0.39 – 4.52) p = 0.648
Diagnosis				
Organic disorder	<10	<10	4.8 (0.87 – 26.43) p = 0.071	3.48 (0.39 – 30.80) p = 0.262
Substance use disorder	14 (41.18)	20 (58.82)	**3.64 (1.80 – 7.38) p = <0.001***	1.53 (0.54 – 4.35) p = 0.429
Schizophrenia	46 (38.66)	73 (61.34)	**5.40 (3.55 – 8.23) p = <0.001***	**4.21 (2.21 – 8.02) p = <0.001***
Mood disorder	113 (73.86)	40 (26.41)	0.79 (0.53 – 1.19) p = 0.265	1.43 (0.78 – 2.62) p = 0.249
Anxiety/neurotic	110 (88.00)	15 (12.00)	**0.27 (0.15 – 0.47) p = <0.001***	**0.45 (0.22 – 0.94) p = 0.033***
Behavioural (Eating)	30	0	N/A	N/A
Personality disorder	31	<10	**0.36 (0.13 – 0.95) p = 0.039***	0.53 (0.16 – 1.74) p = 0.298
Developmental disorder	34 (64.15)	19 (35.85)	1.35 (0.75 – 2.43) p = 0.313	1.66 (0.75 – 3.63) p = 0.208
Conduct/ADHD	43 (70.49)	18 (29.51)	0.99 (0.55 – 1.76) p = 0.965	1.57 (0.75 – 3.34) p = 0.246

CGAS score	N=599			
Most impaired (CGAS Score 1-31)	121 (60.20)	80 (39.80)	Reference	
Moderately impaired (CGAS score 32-40)	143 (72.22)	55 (27.78)	**0.58 (0.38 – 0.89) p = 0.011**	**0.56 (0.32 – 0.97) p = 0.039***
Least impaired (CGAS score 41-80)	162 (80.72)	38 (19.28)	**0.35 (0.23 – 0.56) p = <0.001***	**0.39(0.22 – 0.70) p = 0.001***
Risk to self				
No	72 (61.54)	45 (38.46)	Reference	
Yes	368 (72.15)	149 (27.85)	**0.62 (0.41 – 0.94) p = 0.024***	0.98 (0.52 – 1.85) p = 0.962
Risk to others				
No	230 (79.04)	61 (20.96)	Reference	
Yes	133 (58.85)	93 (41.15)	**2.37 (1.64 – 3.41) p = <0.001***	1.56 (0.88 – 2.75) p = 0.127
Undetermined	95 (70.37)	40 (29.63)	1.58 (1.79 – 3.88) p = 0.051	1.38 (0.73-2.64) p = 0.319
Service use				
Time known to SLaM prior to admission				
0 days	13	<10	Reference	
1-31 days	80 (61.54)	50 (38.46)	0.90 (0.36 – 2.37) p = 0.828	0.98 (0.50-1.92) p = 0.964
1-5 months	96 (76.80)	29 (23.20)	0.43 (0.17 – 1.12) p = 0.086	0.63 (0.33-1.22) p = 0.170
6-12 months	46 (76.67)	14 (23.33)	0.44 (0.16 – 1.24) p = 0.121	0.79 (0.34 – 1.83) p = 0.575
>12 months	222 (70.70)	92 (29.30)	0.60 (0.25 – 1.45) p = 0.255	N/A
Most recent SLaM appointment in 28 days before admission				

No	49 (65.33)	26 (34.67)	Reference	Reference
Yes	409 (70.88)	168 (29.12)	0.77 (0.47 – 1.29) p = 0.324	0.76 (0.33 – 1.75) p = 0.523
S136 prior to admission				
No	449 (72.07)	174 (27.93)	Reference	Reference
Yes	<10	>10	**5.73 (2.56 – 12.84) p = <0.001***	**6.25 (2.06 – 19.01) p=0.001***
Care plan in 12m before admission				
No	271 (65.62)	142 (34.38)	Reference	Reference
Yes	187 (78.24)	52 (21.76)	**0.53 (0.37 – 0.77) p = 0.001***	1.08 (0.64 – 1.76) p = 0.808
Referral Source				
Non-emergency health services	212 (78.23)	59 (21.77)	Reference	
Emergency health services	118 (65.92)	61 (34.08)	**1.86 (1.22 – 2.83) p=0.004***	1.02 (0.57 – 1.82) p= 0.940
Social services	10 (38.46)	16 (61.54)	**5.75 (2.48 – 13.33) p=<0.001***	**4.92 (1.49 – 16.19) p = 0.009**
Police/legal services	<10	<10	**5.39 (1.84-15.75) p=0.002***	**4.22 (1.03 – 17.31) p=0.045**
Education services	36 (75)	12 (25)	1.19 (0.59 – 2.45) p=0.620	0.86 (0.34 – 1.94) p= 0.646
Other	68 (73.12)	25 (26.88)	1.32 (0.78 – 2.27) p=0.314	0.86 (0.42 – 1.73) p=0.668

N=652. [a]The multivariate analysis adjusted for all variables in this table.

8.5 Discussion

As predicted, more adverse pathways into mental health care, and particularly where there has been police involvement, are associated with increased odds of involuntary rather than voluntary hospitalisation. Social care referrals were also strongly associated with involuntary care. However, neither time known to SLaM nor having had an outpatient appointment in the 28 days prior to the admission seemed to impact on the likelihood of an involuntary hospitalisation. The was some evidence of an association between having made a care plan in the 12 months prior to hospitalisation and voluntary rather than involuntary

hospitalisation, although this attenuated on adjusting for other sociodemographic, clinical and service factors. Even when adjusting for sociodemographic factors (gender, age and deprivation level), clinical factors (diagnosis, severity of illness, and risk) and service level factors (pathways into services, time known to services, recent appointment with services, presence of a care plan, and experience of police sections), in this cohort, people under 18 from Black groups were still much more likely than young people from White groups to be detained under the MHA as an inpatient. Although on adjustment the OR for involuntary rather than voluntary admission among people from Black compared to White groups drops from 3.72 to 2.04, which suggests that the factors included in the analysis do have some impact on the association, it seems clear that there are factors outside of those I have investigated which are contributing to this racial inequality.

I will discuss the clinical and policy significance of these findings in the final discussion in chapter 10 which summarises and reviews the thesis as a whole. The strengths and limitations to this study will be covered in the next chapter.

8.6 Conclusion

In the study presented in this chapter, I have found that child and adolescent inpatients with more adverse pathways into services are more likely to be detained under the MHA as an inpatient. Prior contact with outpatient mental health services did not appear to impact on the likelihood of an involuntary over involuntary hospitalisation. In this cohort of NHS inpatients in South London, young people from Black groups were still more than twice as likely than those from White groups to be subject to a detention under the MHA, even after adjusting for sociodemographic, clinical and service-level factors. I will now summarise the findings from the two CRIS studies and discuss their strengths and limitations.

Chapter 9: Summary and discussion of part 3

9.1 Chapter summary

In this chapter I summarise the findings from the two CRIS studies presented in chapters 7 and 8 and discuss their strengths and weaknesses. Finally, I briefly consider how big data might be used to conduct further research in this area.

9.2 Summary of findings from the CRIS studies

Using a large cohort of children and adolescents who were admitted to SLaM inpatient units over more than a decade, I have been able to investigate the social, clinical and service-level factors associated with involuntary over voluntary hospitalisation in children and adolescents. In answer to my main research question presented at the beginning of this section, I have found that the factors associated with involuntary over voluntary hospitalisation in children and adolescents are a diagnosis of schizophrenia, more severe illness, older age, Black rather than white ethnicity, being referred into secondary mental health services by the police/criminal justice system or social services, and having been on a section 136 in the 12 months prior to admission. In answer to my second research question, there are two sociodemographic factors - age and ethnicity - which impact on the likelihood of an involuntary over voluntary hospitalisation, even after adjusting for clinical and service-level variables.

We know that the frequency and severity of mental illness increases throughout childhood and adolescence, so the fact that older age is associated with involuntary rather than voluntary hospitalisation is understandable clinically. It can also be partially explained legally and ethically. In England people aged under 16 can, in certain circumstances, be admitted and treated in hospital under parental consent if they are unwilling or unable to consent to this themselves. Parental consent is used increasingly sparingly as the age of the child increases and the extent of parental responsibility wanes.[113] So, for older adolescents, the only legal frameworks for admission and treatment would either be the young person's own consent or the MHA.

However, the evidence of a strong association between being from a Black rather than White group and involuntary hospitalisation, even after adjusting for social, clinical and service-level

factors, is harder to explain and has not, to my knowledge, previously been shown in a UK sample of children and adolescents. While there may well be contributory social, clinical or service-level factors which I have not considered or been able to adjust for in this analysis, it is important to consider the potential impact of institutional and structural racism on the mental health of children and adolescents and the mental health care that is provided.[284–286] I will leave further discussion about this, and the potential clinical and policy implications to the final discussion in the next chapter. I will now move onto consider the strengths and limitations of the CRIS studies.

9.3 Strengths and limitations

The use of CRIS enabled me to access a very large cohort of child and adolescent inpatients. As involuntary hospitalisation does not occur as often in children and adolescents as in adults,[77] the use of big data such as these enabled me to address an important gap in the research and benefit from high statistical power. The sample size of the whole cohort which was used in the first study presented in chapter 7 was 2165. The smaller cohort used in the second study presented in chapter 8, including just the patients who were living in the SLaM catchment at admission, was 652. To my knowledge, these studies are the largest comparisons of voluntary and involuntary child and adolescent inpatients in the UK.

Despite the strengths of using administrative data for research and the rich data source they provide, there are important limitations to consider. The quality and consistency of the data is not always clear as it has not been collected for research purposes. The majority of the variables used in the analysis were from structured fields, which are necessarily limited in the amount of nuance and detail they can capture. It was beyond the scope of this thesis to conduct validation work on each of the variables used so am unable to estimate the extent of recording error and bias. For example, the legal basis for the admission and treatment of children and adolescents in hospital voluntarily is not routinely recorded. Therefore, some of the inpatients who are recorded as voluntary will have in fact been (as mentioned above) admitted and treated under the consent of their parents/guardians. In this analysis I was unable to distinguish between those admitted under their own consent, or the consent of their parents and so it is unclear whether there may be differences between these groups which might have impacted on the results. In addition, my use of a binary outcome variable (under the MHA or not) means that some young people may have been under the MHA for 1

day, while another may have been detained for several months. This is something that I was not able to allow for in this analysis but should be considered in future work in this area.

I used structured diagnosis fields in which there is known to be a degree of diagnostic and administrative error, which could lead to misclassification.[287] However, a previous systematic review by Davis et al., which evaluated the validity of diagnoses recorded in routine health administrative data found that there was moderate reliability for most diagnostic categories (median kappa = 0.45 – 0.55) with better reliability for psychotic disorders, and less for anxiety disorders.[288] They found that there were more errors at the clinical/diagnostic stage than in the transfer of the diagnosis to routine administrative data. Davis et al.'s study includes patients of all ages but does not examine any difference in accuracy of routine administrative diagnostic codes between adult and child populations. A study using administrative data to look at the stability of diagnoses over time found that diagnoses in childhood and adolescence are subject to more change over time than diagnoses made in adults.[274] There are additional complexities around the use of diagnostic categories in children and adolescents, for example, the recent debate around whether adolescents should be given a diagnosis of borderline personality disorder, and if they are, if they and their family should be informed.[289] Therefore, while the clinical validity of the diagnoses recorded for children and adolescents in the structured fields of CRIS remains unclear, diagnostic uncertainty is also present in clinical practice, particularly in child and adolescent mental health, and the way in which diagnostic decisions are made, recorded and communicated in youth mental health services is an area which has to date been the subject of only a very small body of research.[290]

In these studies, gender is recorded as binary. This means that people who report a gender identity different from that assigned at birth (approximately 1.2%-4.1% of adolescents),[291] and those who do not identify as either male or female, will not have been classified appropriately. This is an important limitation as we know that young people with gender identity concerns are more likely to experience mental health difficulties. We don't know if these young people are at increased risk of involuntary hospitalisation, and this is important to find out.

The aggregation of ethnicity into five broad groups in these studies has clear limitations, which I introduced in chapter 6. Although ethnicity data should be self-ascribed, this does not always happen and may be ascribed incorrectly. In addition, even where it is self-ascribed,

ethnicity is not a time-invariant characteristic and can change over the life course.[292] This is not something I have been able to take account of in my analysis as I was unable to ascertain exactly when ethnicity was ascribed. I amalgamated the ethnic groups because of concerns about data anonymity as well as power, but the homogenization of groups this creates is clearly insufficient. Findings from a public consultation and stakeholder survey conducted by the Office of National Statistics found that aggregated ethnic categories (such as the ones used in my analysis) are inadequate and do not meet the requirements of many data users.[293] In addition, the potential for misclassification and misrepresentation this amalgamation of groups creates may in itself contribute to and perpetuate existing racial inequalities.[11,294,295] Further research in the field requires much more nuanced, culturally-specific groupings in order to accurately identify inequalities which need to be addressed.

With respect to measures of risk, although I was able to identify from the structured field data that a clinician had recorded the presence of risk to self or others, I was not able to clarify how this had been assessed or the factors that had contributed to the decision that the young person posed a risk to themselves or others. In order to understand more about the perceived risk that young people are presenting with, it would be helpful to conduct free text analysis of the electronic records as well as interviews with clinicians about how decisions about risk are made.

In terms of the measures of service use, although it would be hoped that those known to SLaM outpatient services for longer would have received more input from services, this is not necessarily the case. Some young people may struggle to engage with the appointments offered to them, perhaps because they were not perceived to be useful, or may have missed appointments for other reasons, such as physical health problems or difficulties getting to the clinic. Neither is it possible to know from this analysis whether those attending appointments in the 28 days before admission were attending crisis appointments or long-standing therapy appointments. However, these factors are proxies for service use, and indicate that more fine-grained analysis is needed.

One common limitation in the use of big data for research is the potential impact of missing data but with the exception of CGAS scores, the level of missing data in my studies is actually very small (<5%) and did not require further assessment or statistical adjustment. However, this does mean that a small number of cases have been included with missing variables, and

it is possible that this has contributed to some bias in the study findings. If this study is repeated in combined and larger data sets, the likelihood of missing data will increase and further analysis, such as multiple imputation, may be needed. This will ensure that missing data does not undermine the validity of findings from future, potentially larger 'big data' studies in this field.

Another limitation which is often reported by researchers using CRIS is a possible lack of generalisability due to the population of the SLaM catchment area not being representative of the UK population as a whole.[265] Although SLaM is the largest mental health trust in England, it serves a catchment area which differs demographically from the rest of the country and has higher levels of deprivation and lower numbers of people from White ethnic groups. In addition, the services offered by SLaM are quite distinctive and differ from what is offered nationally. For example, it provides some outpatient services which are available to people who are not in the catchment area. This limits the generalisability of these study findings, particularly from my second study which only includes people living in the SLaM catchment. In my first study, more than 50% of the cohort were not residents in the SLaM catchment at admission, but what is not clear, is how representative this cohort is of the population of child and adolescent inpatients across England, and this is something which would be helpful to investigate further. CRIS is being reproduced across other mental healthcare systems in England, many of them covering child and adolescent mental health services.[296] Repeating this research using other similar databases from across England will increase sample size and generalisability of findings, as well as enabling analysis of the potential advantages and disadvantages of different types of clinical services. In addition, there are a growing number of database linkages in place (for example CRIS has been linked to the National Pupil Database and the Child and Family Court Advisory and Support Service (CAFCASS)), which could be used to investigate the associations between involuntary hospitalisation and other factors which I have not been able to consider in the analysis, such as educational attainment, school exclusion or looked-after-child status.[297,298] It is also important to acknowledge that the use of CRIS meant that I was only able to access information about young people admitted to NHS psychiatry inpatient units. This means that any young people admitted, either voluntarily or involuntarily, to private inpatient units or general hospitals for mental health treatment have not been included. These will be

important groups to consider in future research as data on these groups is not collected systematically, for example, the use of the MHA in general hospitals is not captured in the NHS Digital MHA statistics. As such, we know very little about the young people in these settings, and how the use of the MHA might vary when compared to young people in NHS inpatient settings.

9.4 Conclusion

In conclusion, the two studies presented in chapters 7 and 8 use CRIS to address an important gap in the literature about the use of the MHA in children and adolescents. Despite the limitations of using administrative data for research, using CRIS has enabled me to investigate social, clinical, and service-level factors associated with involuntary hospitalisation among people under 18 in a very large clinical cohort. The finding that child and adolescent inpatients from Black groups are more likely to be detained under the MHA than those from White groups, even when adjusting for other factors has not previously been shown in a UK study. I will now summarise, review, and discuss the findings from the thesis as a whole and reflect on the potential clinical and policy implications as well as considering where further research is needed.

Chapter 10: Discussion

10.1 Chapter summary

In this chapter I summarise the findings from the thesis and provide an overview of comparisons with previous literature. I also consider future research directions and suggest potential implications from my findings.

10.2 Overview of thesis

The thesis opened by reviewing compulsory psychiatric hospitalisation, including the potential for negative outcomes and the longstanding racial inequalities in its application. Compulsory hospitalisation is generally regarded as a treatment of last resort and is, in theory, reserved for those with the most severe, complex and/or risky mental health presentations. I described how despite international motivation to reduce the use of coercion in psychiatry, it remains widely used and, in many countries, there has been a significant and largely unexplained rise in rates of involuntary psychiatric hospitalisation over recent years. In addition, there is very little empirical evidence about how to reduce the use of involuntary hospitalisation.

I also explained in the introduction that most mental disorders start in adolescence with potential life-long impact, and yet child and adolescent mental health care and research has traditionally been under-valued and under-resourced. There is widespread recognition that this needs to change. However, there has been very little research into, or clinical attention given to, the use of involuntary hospitalisation in children and adolescents. This is despite the fact that the children and adolescents who are subject to coercive psychiatric care may represent some of the most vulnerable young people in society, and there is evidence that the involuntary hospitalisation of people under 18 is increasing in some areas. I explained why understanding more about the factors which might make someone more likely to experience an involuntary hospitalisation is important as it may help to identify those at risk and highlight where interventions should be targeted to reduce or prevent the need for coercive care among people of all ages. It may also help to explain the wide variations in rates of involuntary hospitalisation inter- and intra-nationally. While there has been quite extensive research into the factors associated with involuntary hospitalisation among adults, the findings are often contradictory. There has been very little research into this in children and adolescents.

This introduction was followed by a brief overview of the philosophical, ethical and clinical issues associated with involuntary hospitalisation to attempt to explain why it continues to be used so widely. In this first section of the thesis, I began by introducing the age-old conflict between autonomy and paternalism, which is currently being enacted in the so called 'Geneva Impasse', as UN human rights groups struggle to agree on whether the use of involuntary hospitalisation can conform to human rights standards and whether it can ever be justified. I introduced the four main principles of medical ethics and explained how decisions about involuntary hospitalisation often involve conflict between these principles. Ethical decisions about involuntary treatment are further complicated by the fact that we know very little about the outcomes of involuntary hospitalisation among those aged over and under 18 in terms of clinical outcomes, risk management and the experiences of being detained. In order to put these discussions into a historical context, I then present an overview of mental health legislation in the United Kingdom, from its origins in 13th century statutes to the proposed changes in the draft Mental Health Bill, which was published in June 2022. I focused on the evolution of UK legislation to demonstrate how changes in mental health law can reveal much about societal views around mental illness and those who experience it, as well as to provide important context for the historical cohort studies based on data from Southeast London, which are presented in part three.

In the second part of the thesis, I presented two international systematic reviews, meta-analyses and narrative syntheses that I carried out to investigate the sociodemographic, clinical and service level factors associated with involuntary rather than voluntary hospitalisation across the life course. The first review included those aged over 18 only and included 77 studies from 22 countries. It specifically excluded ethnicity as this was reviewed in a companion study which found that all ethnic minority groups were at increased risk of involuntary detention when compared to majority groups.[11] In this systematic review and meta-analysis, I found that previous involuntary hospitalisation and a diagnosis of a psychotic disorder were the factors associated with the greatest odds of involuntary rather than voluntary hospitalisation among adults. Other clinical and service-level factors associated with an involuntary rather than voluntary hospitalisation included a diagnosis of bipolar affective disorder, positive symptoms of psychosis, reduced adherence to treatment before hospitalisation, police involvement in admission, perceived risk to others and reduced insight

into illness. The measurement of 'risk' and 'insight' varied greatly and in several studies the tools used to measure these factors were not described. I also found that there were several sociodemographic factors which were associated with involuntary rather than voluntary hospitalisation including male gender, single marital status, unemployment and receiving welfare benefits. There was large heterogeneity between the studies, likely due to the wide range of study methodologies, study settings, populations, and periods studied as well as different legal and healthcare systems.

The second systematic review and meta-analysis included only children and adolescents under 18 and demonstrated how little research attention this topic has been given in comparison to adults. Despite having no date or language restrictions on the searches, only 23 papers from 10 countries met inclusion criteria. Clinical factors associated with involuntary rather than voluntary hospitalisation among both adults and children were a diagnosis of psychosis, risk to others and greater illness severity. In those aged under 18, substance misuse disorder, intellectual disability and presenting as a risk to self were also all associated with involuntary rather than voluntary hospitalisation. Involuntary hospitalisation in children and adolescents was also associated with being older than 12 and being from a Black rather than a White ethnic group. Unlike in adults, gender was not associated with involuntary hospitalisation in children and adolescents. It was not possible to investigate all the risk factors identified in the adult studies in children and adolescents, such as a previous involuntary hospitalisation, lack of insight, police involvement in admission, or markers of socio-economic deprivation as this information was not included in the studies of people aged under 18. As with the review of risk factors for involuntary hospitalisation among adults, there was large heterogeneity between the studies, and due to the paucity of literature in the field, some of the meta-analysis results are based on a very small number of studies. I was unable to investigate the mechanisms underlying the factors associated with involuntary hospitalisation nor the interactions between them in either of these systematic reviews. These reviews demonstrated that more research into the use of involuntary hospitalisation in children and adolescents was urgently needed, particularly into the ethnic discrepancy I had identified, as well as the potential interactions between the factors associated with involuntary hospitalisation.

In the third part of the thesis, I described how I went on to investigate the social and clinical factors associated with involuntary hospitalisation in a large clinical cohort of children and adolescents in South London. My aim was firstly to understand more about the social and clinical factors associated with involuntary hospitalisation in children and adolescents. This included investigating factors such as increased deprivation levels and limited community mental health service use/access, for which there was some evidence of an association with involuntary hospitalisation in the adult literature, but to date had not been included in the child and adolescent literature in this field. My secondary aim was to investigate whether any sociodemographic factors, and specifically ethnicity, would be associated with involuntary hospitalisation after adjusting for clinical and service factors.

I first introduced the administrative data source I used (CRIS), drawing attention to some of the strengths and limitations of using big data such as electronic health records. Having introduced the data source and setting, I presented two historical cohort studies. The first included all children and adolescents admitted to inpatient units in South London and the Maudsley NHS Foundation Trust over a 13-year period and compared those who were placed under section 2 or 3 of the Mental Health Act during their admission, with those who were in hospital voluntarily. I found that children and adolescents in this South London cohort from Black groups were much more likely than those from White groups to have an involuntary rather than voluntary hospitalisation, even when controlling for age, gender, deprivation level, diagnosis, severity of illness and risk. The second and final study included only children and adolescents who were living in the SLaM catchment at the time of their admission and included service use and pathways into mental health services. This study found that neither the number of outpatient appointments nor time known to SLaM services prior to the hospital admission seemed to impact the legal status of the admission, but involvement of police prior to the admission was associated with involuntary rather voluntary treatment. In this local cohort, I also found that young people from Black groups were much more likely than those from White groups to be treated involuntarily than voluntarily, even after controlling for service use and more adverse pathways into care.

10.3 Overview of comparisons with previous literature

In this section I review the findings of the thesis in more detail, comparing the studies in the thesis with each other, as well as with previous literature. I begin with discussion of the clinical

factors associated with involuntary hospitalisation in children, adolescents, and adults, then consider the service-level factors and finally the socio-demographic factors.

10.3.1 Clinical factors associated with involuntary hospitalisation

Diagnosis, symptom severity and insight

The findings from both of the systematic reviews and the two CRIS studies demonstrate that a diagnosis of a psychotic disorder is a significant risk factor for involuntary rather than voluntary hospitalisation in people of all ages. Psychotic disorders can be among the most severe and disabling mental health conditions, and it is perhaps reassuring that mental health legislation is being used most frequently for people with the most severe mental health needs. In some jurisdictions, for example, in Finland, adults can *only* be involuntarily detained if they have a diagnosis of psychosis (although in Finland this is not the case for people under 18 for whom a mental disorder is more broadly defined than it is for adults).[299] However, there remains a paucity of knowledge about what specific factors might increase the risk for involuntary admission in someone with psychosis, and the pathways and mechanisms by which this occurs, particularly among young people. Several studies which have investigated factors associated with involuntary admission among a cohort of adults who all have a diagnosis of psychosis, have found that the risk of involuntary hospitalisation is partially driven by clinical factors such as the severity of symptoms (eg. delusions, bizarre behaviour and formal thought disorder) and lack of insight into illness.[6,172,191,300,301] Perhaps unsurprisingly, more severe/impairing illness, was found to be associated with involuntary rather than voluntary hospitalisation across all the studies included in this thesis. In adults, lack of insight was also found to be a risk factor for involuntary rather than voluntary hospitalisation, though this was not mentioned in any of the studies on children and adolescents. Unfortunately, neither was it recorded systematically enough in the SLaM CAMHS data for me to include insight as a variable in the CRIS studies.

An involuntary hospitalisation might perhaps be helpful in terms of offering further assessment, treatment and a safe environment for those with the most severe and impairing clinical symptoms who may also lack insight into their illness, whatever the person's age or primary diagnosis. However, as Rachel Rowan Olive and Patrick Nyikavaranda highlight in their lived-experience commentary on the published version of the study presented in

chapter 4, these clinical factors, "largely measure clinical opinion" and there is little attention afforded to the way in which a clinician's manner, the hospital environment, or the potential fear or threat of involuntary hospitalisation might exacerbate presentations and impact assessments.[302] They suggest that this is particularly problematic with respect to concepts such as insight, "which is often poorly defined and can be used to pathologise disagreement with treatment plans or non-medical understandings of one's own experience."[302] Indeed, although insight was strongly associated with involuntary hospitalisation in eight of the studies included in the systematic review presented in Chapter 4, only three of these used a formal rating scale to measure insight.

The other diagnosis associated with involuntary hospitalisation in adults was bipolar affective disorder, with depression, anxiety, neurosis, mood disorder (not otherwise specified) and personality disorder, all associated with voluntary versus involuntary hospitalisations. Among children and adolescents, a diagnosis of intellectual disability was found to be strongly associated with involuntary rather than voluntary hospitalisation in the international systematic review. This finding was largely driven by the results from a study from Germany (n=10547) in which intellectual disability was one of the strongest predictors of involuntary admissions. [60] The authors suggest that this is not a surprising finding due to the fact that most people with intellectual disabilities would not be considered capable of making decisions such as health decisions, "and would not be, therefore, able to decide about hospitalisation" (p.158). This finding is interesting to compare to the situation in the UK, where intellectual disability, even in those under 18, does not automatically preclude the ability to make an informed decision about psychiatric care.[303] In addition, the MHA 1983 specifically excludes intellectual disability from the definition of mental disorder. Currently, someone with an intellectual disability, without a comorbid disorder can be detained involuntarily, but only if the intellectual disability is associated with "abnormally aggressive behaviour" and/or "seriously irresponsible conduct".[303] It is rarely given as a primary psychiatric diagnosis in the UK, which means it was not something I could investigate using the data I extracted from CRIS, as there were less than 10 people in the whole cohort of inpatients under 18 who had a primary diagnosis of intellectual disability. A primary diagnosis of autism or developmental disorder was given more frequently. In the first CRIS study there appeared to be a weak association between autism and involuntary hospitalisation on multivariate analysis, but this

was not apparent on univariate analysis and is therefore difficult to interpret. No association between autism and involuntary hospitalisation was found in the second CRIS study or the systematic review focusing on children and adolescents. Neither autism nor learning disabilities were mentioned in any of the studies included in the systematic review of factors associated with involuntary hospitalisation among adults.

The UK government has stated that involuntary hospitalisation is being used for "too many" people with learning disabilities and autism, of all ages, and that these hospitalisations are "too long".[120] The average length of stay in hospital for people with autism or learning difficulties is 5.4 years, for people without these conditions it is 27 days.[120] Concern about the high numbers of children and adolescents with intellectual disability being detained in psychiatric hospital in the UK prompted a Joint House of Commons, House of Lords report which was published in 2019.[304] This report notes that that, "when young people [with an intellectual disability] are detained it is usually the result of a long and predictable series of failures to appropriately support them and their family". With the aim of reducing the use of involuntary treatment in this population, the UK Government's draft Mental Health Bill proposes removing learning disabilities and autism as conditions for which an individual can be detained under a Section 3 of the MHA, in any circumstances.[119] This has received a mixed response from stakeholders.[305] Many appreciate the intention to reduce coercion in this population, but are concerned that without major investment in alternative community services it could have unintended consequences, such as leading to people with a learning disability and/or autism being held in hospital under other legal frameworks (eg. the Mental Capacity Act) which do not afford the safeguards that exist within the MHA, such as the right to appeal a detention.

A primary diagnosis of substance misuse disorder was the only other diagnosis that was associated with involuntary rather than voluntary hospitalisation among children and adolescents in the systematic review and on univariate (but not multivariate) analysis in the two CRIS studies. It was not associated with involuntary hospitalisation among adults. The studies which found an association between substance misuse and involuntary detention in the systematic review are from Germany and Finland, where detention criteria for children and adolescents are broader than they are for adults, and are focused on protecting minors from 'developmentally harmful refusal of treatment'.[57,60,299] However, the association on

unadjusted analysis between a primary diagnosis of substance misuse and involuntary hospitalisation found in the UK based CRIS studies is surprising as the MHA excludes substance misuse from the definition of a mental disorder. There is evidence in adult populations to suggest that substance misuse cannot successfully be treated coercively,[306] and some evidence that outpatient treatment with family therapy is the most effective treatment for young people who misuse substances.[307] However, community interventions are increasingly hard to access (certainly in the UK) due to significant reductions in funding for substance misuse services, particularly for adolescents.[308,309] It is not possible to investigate with the data I have whether the use of involuntary hospitalisation in young people with substance misuse has changed over time, or what the outcomes of coercive treatment in this population are, but this would be interesting to investigate further. Given the potentially poor outcomes of substance misuse in young people and the negative effects on the developing brain,[310] it may be that a period of involuntary care is helpful in initiating treatment in this population. It is, therefore, essential that we understand more about the outcomes of these involuntary admissions internationally, to ensure that young people with substance misuse disorders have access to the most effective, evidence-based and developmentally appropriate treatment.

Previous involuntary hospitalisation

Previous involuntary hospitalisation was one of the factors that I found to be most strongly associated with involuntary rather than voluntary hospitalisation among adults. The mechanisms behind this association are unclear but are likely to be multifaceted. It may be related to the illness process itself as serious mental illness tends to fluctuate in severity and reoccur over time. It could be related to clinical decision-making processes as a previous involuntary admission could influence the opinions of the assessing clinical team. As Olive and Nyikavaranda write, "A patient's clinical history wears a path that unconsciously directs the feet of clinicians meeting the patient for the first time".[302] Furthermore, previous involuntary hospitalisation can be experienced as traumatic and can negatively affect future engagement with mental health services.[3,311] This might mean that people who have previously been detained do not seek help until the point of crisis, when a further involuntary hospitalisation might seem like the only appropriate treatment option. Moreover, the significant association between previous involuntary hospitalisation and risk of future involuntary hospitalisation

could provide an explanation for the acceleration in rates of involuntary hospitalisation in some countries and within some population subgroups.[19] Only two studies reported on the impact of a previous involuntary hospitalisation among children and adolescents, and both of these found that a previous involuntary hospitalisation was strongly associated with a further involuntary hospitalisation, but the data could not be included in the meta-analysis.[248,312] In the historical cohort studies, I only included young people who were admitted to psychiatric hospital for the first time, which meant that I was unable to investigate previous admissions. Therefore, it is not clear from the literature to date, whether an involuntary hospitalisation in childhood or adolescence is associated an increased risk of involuntary hospitalisation in future. It is possible however, if this is the case, that reducing involuntary hospitalisations in childhood and adolescence could lead to a reduction in the use of involuntary hospitalisations in adults. Longitudinal or prospective studies which map the pattern of involuntary hospitalisations from childhood to adulthood would be extremely helpful in understanding how involuntary hospitalisations in youth potentially impact on a person's interaction with mental health services in adulthood.

Risk to self or others

In my systematic review of risk factors for involuntary hospitalisation in adults, risk was not reported consistently enough for me to include it in the meta-analysis. But 18 studies reported on the link between perceived risk to others and involuntary hospitalisation, and all found a positive association. Risk to self was reported widely but the findings were much more mixed, with most studies finding no association between risk to self and the legal status of the hospitalisation. In the child and adolescent review (Chapter 5), the data on risk was meta-analysable and both risk to self and risk to others were found to be associated with involuntary rather than voluntary hospitalisation. In both CRIS studies, risk to others was associated with involuntary hospitalisation on univariate analysis but this association disappeared on adjusted analysis. Interestingly, risk to self was not associated with either voluntary or involuntary hospitalisation in the first CRIS study but was associated with *voluntary* rather than involuntary hospitalisation in the second, smaller CRIS study. However, this association also disappeared on adjusted analysis. Given that risk is a criterion for detention in most jurisdictions,[31] it is perhaps unexpected that the findings around risk are quite so inconsistent.

The inconsistency in the findings about risk may be related to variations in the way in which risk to self and others was measured and defined across the studies included in both systematic reviews, with scant use of formal assessment scales. Risk assessment tools for use in children and adolescents are particularly underdeveloped and poorly used, which means that there could be inconsistencies in the way that clinicians judge and measure risk, potentially leading to different conclusions about the need for involuntary hospitalisation.[84,85,313,314] It is extremely difficult to accurately measure and manage risk, but more consistency in risk assessment methods, perhaps through wide-spread agreement on the use of a specific risk assessment tool, could help to ensure that decisions about involuntary hospitalisation are made more equitably.

10.3.2 Service-level factors and pathways to care

- Access to mental health services and treatment in the community

Among the studies included in my systematic review of factors associated with involuntary hospitalisation among adults, there was very little consideration of the impact of previous mental health service use or the availability of alternative treatments on the likelihood of an involuntary hospitalisation. One study found that the availability of alternative, less restrictive forms of care was the most crucial factor in determining whether to admit patients involuntarily.[179] Two population studies identified that there were fewer involuntary hospitalisations in settings where more home visits were provided. And on an individual level, one study reported that contact with a community-based mental health service in the 30 days prior to admission was strongly associated with voluntary rather than involuntary hospitalisation.[191] Several studies found that poor treatment compliance among adults prior to the inpatient hospitalisation was associated with involuntary hospitalisation. However, the reasons for this were not clear from the data available. While poor compliance may be associated with lack of engagement with services, it may also indicate difficulty accessing services, or lack of appropriate services. It is also likely to be associated with other factors including illness severity and patient understanding of illness. Unpicking these associations requires further quantitative as well as qualitative research to understand the interrelationships between these factors and how treatment concordance could be better supported, particularly among those most at risk of a future involuntary hospitalisation.

None of the studies included in the review of factors associated with involuntary hospitalisation among children and adolescents investigated the association between involuntary hospitalisation and the availability of less restrictive alternative services (e.g. home treatment teams), or previous use of community services. One study found an association between involuntary hospitalisation and lack of 'medical compliance' and 'motivation for treatment', although it is unclear whether this refers to the way in which the young people were able to engage with mental health services in the community prior to their hospital admission, or compliance and motivation with the emergency assessment where these factors were measured.[312]

In my historical cohort study, which included only children and adolescents who were living in the SLaM catchment area at the time of their admission (n = 652), I found that neither time known to community mental health services, number of previous appointments nor having had an appointment in the month prior to the inpatient admission appeared to impact the legal status of the hospitalisation. However, having made a care plan in the year prior to the admission was associated with *voluntary* rather than involuntary hospitalisation among children and adolescents, although this association disappeared after adjusting for other clinical and sociodemographic factors.

- Pathways into care

A strong association between involuntary hospitalisation and more adverse pathways into care (such as police rather than family doctor involvement), was reported in all the studies which measured this, which were included in my review of the adult literature (chapter 4). Only two studies in my review of the child and adolescent literature (chapter 5) reported on pathways into care, and the findings contract each other. In one, referral by a GP or non-psychiatric specialist was associated with involuntary rather than voluntary hospitalisation,[315] and the other study found the opposite to be true.[312] None of the studies included in my child and adolescent systematic review investigated the association between police involvement and involuntary hospitalisation. In my CRIS study, I found that there was a strong association between involuntary hospitalisation and having been referred into mental health services by the police/legal system. This association persisted after adjusting for other clinical, service and sociodemographic factors (Chapter 8).

To my knowledge there are no other studies which have investigated the impact of service use or referral pathways among voluntary and involuntary inpatients aged under 18. Understanding how to prevent involuntary hospitalisations in people of all ages, by ensuring there is appropriate community support to prevent mental health crises escalating in the first place and ensuring that there are alternative treatments available when crises do occur is an area where more research is urgently needed.

10.3.3 Sociodemographic factors

Gender

I found that male gender is associated with involuntary rather than voluntary hospitalisation among adults. However, my systematic review of factors associated with involuntary hospitalisation among children and adolescents found no association with gender. In the CRIS analyses, female gender was associated with voluntary rather than involuntary hospitalisation on unadjusted analysis, but this association disappeared after adjusting for other clinical and sociodemographic factors. In my first CRIS analysis, over 60% of the child and adolescent inpatients were female. In contrast, in a similar CRIS study of adult inpatients over the same time period, 55.7% of the inpatients were male.[279] I had initially assumed that the high number of females in my cohort could be due to a disproportionate number of young inpatients with eating disorders who are more often female than male, but in fact, only about 8% of the cohort had a primary diagnosis of an eating disorder (chapter 7). I cross-checked these data with a SLaM CAMHS inpatient consultant, who confirmed that there were very few inpatients in SLaM with eating disorders as they had robust community treatment pathways and tried to avoid inpatient admissions among this population as much as possible.

It is unclear why there is an association with male gender and involuntary hospitalisation among those aged over 18, but not under 18. One explanation may be that rates of mental disorder are higher among adolescent girls than boys,[47] leading to higher rates of inpatient admissions among girls than boys and consequently, a more equal number of involuntary hospitalisations across the genders than occurs in adults. There is some evidence that boys who demonstrate antisocial behaviour may be more likely to be diverted to the criminal justice system, while girls demonstrating anti-social behaviour are more likely to be diagnosed with a psychiatric disorder, but research on this is limited and poorly understood and it is not

clear why this would not also occur in the adult population.[316] In addition, one Finnish study identified that hostile behaviour, 'temper tantrums' and breaking property was associated with involuntary referral to hospital, but only in girls.[231] Understanding more about these gendered expectations of risk and behaviour and how they might impact clinical decision-making is important in further understanding the potential drivers of involuntary hospitalisation among those over and under 18.

Age

In children and adolescence, older age (adolescence vs childhood, and older adolescence vs younger adolescence) appears to be strongly associated with involuntary hospitalisation and was found in the systematic review and both of the CRIS studies. This corresponds with the age of onset of the more severe mental disorders, which were found to be associated with involuntary hospitalisation such as psychosis and substance misuse disorders. In addition, younger people can sometimes be admitted to hospital 'voluntarily' under parental consent without the need for mental health legislation, but this becomes more problematic as the young person increases in age. The age at which a young person can be admitted under parental consent varies from country to country. In the UK, in theory, parents can consent for anyone under 16 but in France it is 13.[233] Detailed information about international variations in the application of mental health legislation among minors is not available and would be a useful avenue for further research.[317] I did not investigate age as a risk factor for involuntary hospitalisation in the systematic review on adults. However, in order to understand properly the drivers of involuntary hospitalisation across the life course, future work in this field should also explore potential differences in risk factors for older people (in the UK, 'old age' psychiatric services treat those aged over 65), compared with those accessing general adult services.

Living conditions

I found in my systematic review of factors associated with involuntary hospitalisation among adults that those who are single, previously married and lacking social support appear to be more likely to have an involuntary than voluntary admission. This could be a reflection of the associations that are increasingly recognised between loneliness, scant social support, and severe mental health difficulties.[318,319] It might also reflect the role that friends and family

may have in encouraging and facilitating help-seeking by voluntary means. In the systematic review of factors associated with involuntary hospitalisation among children and adolescents, I found no evidence of an association between involuntary hospitalisation and whether a young person was living with their parents or family at the time of admission, although none of the four studies which measured this clearly specified the living arrangements of those not living with family, so these participants could have included those living with friends, in an institution, or in foster care. From my own clinical experience in the UK, I know that decisions about whether or not a young person needs to come into hospital involuntarily, or whether they can be supported at home can sometimes depend on family functioning and the family's capacity to support their child from an emotional but also a resource perspective. An adolescent who is expressing suicidal ideation may be able to be supported in the home environment with home visits from a community team if they have parents who are able to remain at home with them while they recover. However, this is not practical for many families who have to work outside of the home each day and are not entitled to paid leave, or those with younger children to care for too. To my knowledge, there has been no research into how these decisions are made, and how the negotiations with families usually take place. Living conditions of children and young people are not routinely recorded in the SLaM electronic health records, which meant that I was not able to investigate this further using CRIS.

Deprivation

In the systematic review on factors associated with involuntary hospitalisation among adults, at a population level there was a positive dose-response relationship between area-level deprivation and increased rates of involuntary hospitalisation, although this association was reported in only four studies. In addition, involuntary hospitalisation was found to be associated with markers of deprivation at an individual level, such as unemployment and receiving welfare benefits. The bidirectional and cyclical link between poverty and poor physical and mental health is well established.[320] However, it remains unclear why people who are subject to economic deprivation, both on an individual and population level, should be more likely to be hospitalised against their will than those from the least deprived groups. Understanding the mechanisms behind this health-care inequality should now be a research and policy priority. Only one of the studies in the child and adolescent review considers a potential association between socioeconomic status and involuntary hospitalisation. This

study compares rates of involuntary hospitalisation across the different regions of Finland and finds that high rates of involuntary hospitalisation occurred in areas where there were also more child welfare placements. The authors suggest that this could be related to regional differences in the resources available to support young people effectively in the community.[58] What I have been unable to do in the studies included in this thesis, is to gain clarity on the interplay between socioeconomic deprivation on either a personal or population level, and access to appropriate community mental health services and potential alternatives to involuntary hospitalisation such as home treatment teams or social care support.

In my first CRIS analysis I found that being from the most deprived group was associated with involuntary rather than voluntary hospitalisation, but this association disappeared in the adjusted analysis. In the second study, which included only inpatients who were living in the SlaM catchment at the time of their admission, there was no association with involuntary hospitalisation and deprivation. This was unexpected given the known associations between mental health and poverty. In the UK, children and adolescents living in the poorest 20% of households are four times more likely to develop a mental disorder than those from the wealthiest 20%.[321] International data, mostly from high income countries has found that children growing up in socioeconomic disadvantage were 2-3 times more likely to experience mental health problems than their peers who did not have similar economic disadvantage.[322] As Kirkbride and colleagues summarise, there are likely to be biological, psychological and social factors impacting on this association, potentially including lack of adequate nutrition, instability of family environments and reduced access to education and employment opportunities.[323] While it does not directly follow from this that children and adolescents from poorer households should be at increased risk of involuntary hospitalisation than those from richer households, I had expected this to be the case from the findings in the adult data. It is possible that the IMD data is too broad and non-specific to capture children and adolescents who are living in poverty. Further analysis should use more nuanced, and ideally individualised measurements, such as those accessing free school meals. Measures of socioeconomic disadvantage on both individual and population levels must be included in further research in this field to enable an understanding of how socioeconomic factors interact with the other variables I have identified, particularly ethnicity and access to

alternative community services, to impact the risk of involuntary hospitalisation among people of all ages.

Ethnicity

The over-representation of adults from minority ethnic groups in hospital involuntarily in the UK and globally has been recognised for decades. Attempts to explain and change this have, so far, been largely unsuccessful. As Derek Tracy wrote in his Highlights column in the BJPsych in January 2023, "That there are ethnic inequalities in involuntary admission under the UK's Mental Health Act is not a new finding. Isn't that statement appalling? That this continues is beyond frustrating. The data are there, they are clear, they are consistent. What will it take to shift this? How long to we have to stare at this open inequality and seemingly accept that it's how things are?"[324] Prior to my investigation, there had been very little research into whether this racial disparity also exists among people aged under 18. It could be that one of the reasons why this inequality continues is because we need to intervene earlier, and so understanding whether there are ethnic inequalities in the use of involuntary hospitalisation among children and adolescents is very important? The fact that this has largely eschewed academic, clinical and political interest to date is also an example of another 'open inequality', which needs to be addressed.

Some explanations for the increased use of involuntary hospitalisation among people from Black and minority ethnic groups have included increased rates of psychotic disorders,[325] more adverse pathways into care,[326–329] and lack of access to or reluctance to engage in community mental health services.[330–332] It has also been linked to the fact that ethnic minority and migrant populations are often concentrated in areas of socioeconomic disadvantage due to lack of access to material resources and discrimination.[333,334] However, these explanations and a potential link to involuntary hospitalisation are often lacking primary evidence.[11] In addition, many of these 'explanations' locate the cause or perpetuation of the mental illness in the people themselves, which can perpetuate racialised narratives of mental illness stigma and ignore the significant structural problems, such as racism, which likely affect the poorer quality of mental health treatment that ethnic minority groups receive.[281,335]

In children and adolescents there has been very little research into these areas. There is some evidence that young people from Black and minority ethnic groups are more likely than young

people from White ethnic groups to be referred to mental health services via the criminal justice system or social care, rather than through less coercive routes such as a family doctor.[336–339] In terms of increased rates of mental illness, as has been reported in ethnic minorities in adults,[340] a recent national survey of mental health in children and adolescents in England found that children and adolescents from Black and Minority ethnic backgrounds were actually less likely than those from White ethnic backgrounds to have any mental disorder.[341] There is also some evidence that young people underuse mental health services generally, but those from ethnic minority groups have the greatest level of unmet need with less access to services and shorter treatment periods than young people in majority groups.[342–345] However, these findings are not consistent. For example, Edbrooke-Childs and colleagues demonstrate, in a very large sample from 26 CAMHS services, that children from Black and minority ethnic groups were less likely than White British children to end treatment due to child and family non-attendance.[346] They hypothesise, however, that this could be explained by larger numbers of children from Black and minority groups accessing CAMHS via coercive routes, such as through social care and the Children Act 1989, for whom non-attendance would not be possible.

In my international systematic review of factors associated with involuntary hospitalisation among children and adolescents, I was only able to identify seven studies that mentioned the ethnicity of the children and adolescents who were involuntarily detained [223,249,347–351] compared with 71 studies included in the international meta-analysis of ethnic variations in involuntary hospitalisation among adults.[11] Of the seven studies I identified, only three could be reported in the meta-analysis, two from the UK and one from the USA.[249,350,351] I found that young people from Black groups (including Black British, Black Caribbean, Black African, African American, and Black Other) were much more likely than young people from White groups (including White British, White Irish, White other) to have an involuntary rather than voluntary admission. There was no association with involuntary hospitalisation among Asian or other ethnic groups. These findings correspond with the findings from my two CRIS studies which compared children and adolescents in psychiatric hospital involuntarily with those in hospital voluntarily in South London and the Maudsley NHS Foundation Trust. The first study, involving the whole cohort of NHS psychiatric inpatients over a 13-year period, found that those from Black, Asian and Other ethnic groups were more likely than those from White

groups to have an involuntary rather than voluntary hospitalisation. However, on adjusted analysis, only the association between involuntary hospitalisation and young people from Black groups remained. In the second study, including only young people living in the SLaM catchment on admission, those from Black groups were more likely than those from White groups to have an involuntary rather than voluntary hospitalisation and this association remained on adjusted analysis. There was no association between involuntary hospitalisation among any of the other ethnic groups investigated.

While acknowledging the clear limitations of relying on potentially non-self-ascribed and non-homogeneous grouping of people by crude ethnic categories, both of the CRIS studies suggest that children and adolescents from Black groups are much more likely than those from White groups to have an involuntary than voluntary hospitalisation, even after adjusting for diagnosis, severity of illness, perceived risk to self and others, deprivation level, service use and pathways into care. This suggests that although there may be racial disparities in rates of mental illness, pathways to care and service use among children and adolescents, none of these factors can completely explain the increased risk of involuntary hospitalisation in young people from Black groups in this cohort. Children and adolescents may therefore face 'glaring' racial inequalities in access to appropriate mental health services, and the increased use of involuntary hospitalisation in this population further contributes to the structural and institutional factors that lead to the systematic disadvantage of people from minority ethnic groups.[11,147,280,286,352] Given that I found in my systematic review of risk factors for involuntary hospitalisation among adults that a previous involuntary hospitalisation is one of the main risk factors for a future involuntary hospitalisation, the increased use of involuntary hospitalisation among children and adolescents from Black groups that I have identified, could be contributing to a cycle of inequality of access to mental health care for people of all ages. Socioeconomic factors may play a role in these adverse pathways, and census data demonstrates that people form ethnic minority groups are more likely than White British people to live in the most deprived 10% of neighbourhoods in England, but the additional experience of racism and discrimination unique to those from minority groups is associated with worse health outcomes, particularly in children and adolescents.[353] However, little attention has been given to the role that structural and interpersonal racism plays in the mental health care of children and adolescents, and the effect on health outcomes of early

experiences of discrimination.[354] Nor do we know how these factors might impact on the way in which parents/caregivers cope with mental illness in the family, and make decisions about help-seeking.[355] Greater understanding of how the inter-related dimensions of racism and deprivation shape risks of severe mental illness and access to care across the life course is essential in order to inform policy and practice and to create a truly anti-racist public health agenda.

10.4 Future research directions

Many gaps in the literature remain which would be important areas for future research. There is large scope for further research using CRIS and other administrative, or 'big' data sources. The linkage between CRIS and the National Pupil Database (NPD) could be used to investigate the risk factors for involuntary hospitalisation among all school age children in the SLaM catchment. This would also enable assessment of the association between involuntary hospitalisation and factors which were not possible to investigate using CRIS alone, such as more nuanced measures of deprivation (eg. free-school meal use), as well as educational factors (eg. school exclusion) and measures of social care involvement (eg. looked-after child status).[256] As CRIS includes data on people of all ages who access SLaM services, it would also be possible to use it to conduct longitudinal analysis to investigate whether those who have experienced involuntary hospitalisation in childhood/adolescence are more likely to experience further involuntary hospitalisation in adulthood, and if so, what are the factors that make this more likely. Longitudinal work using linked databases (for example the Education and Child Health Insights from Linked Data (ECHILD) database, which is linked to the NPD and Hospital Episode Statistics (HES) datasets) could also include analysis of other outcomes from involuntary hospitalisation in childhood, including mental health, physical health and educational outcomes. In addition, databases like CRIS have been established across the UK and replicating the CRIS studies included in this thesis in other areas would strengthen the generalisability of the findings, as well as providing insight into whether different types of community service provisions impact on the use of involuntary hospitalisation among children and adolescents.[296] In addition, replication of the analysis across different databases across the UK would increase the sample size and hopefully reduce the need to use such crude, non-homogeneous ethnic groupings.

In the UK, the proposed changes to mental health legislation aim to reduce the need for coercion, but also to improve the experience of involuntary treatment for people when there are no alternatives, for example, through offering choice wherever possible and recognising patients as individuals.[77] While there has been some investigation of the experiences of involuntary hospitalisation among adults, there has been very little investigation on the experiences of children and adolescents.[6] Further qualitative work into young peoples' experiences of involuntary hospitalisation would deepen our understanding about how coercive care could be less frightening and traumatic. We know among adults that communication with staff is an important part of this, but we have no data on what is most helpful for children and adolescents.[6] Speaking to young people about their experiences would also help us to understand the pathways through which young people come into hospital both voluntarily and involuntarily, the help they seek beforehand, and what support they find, or would find, useful.

Given the important role that parents/guardians usually play in the involuntary detention of their children, it would also be very helpful to understand more about their experiences of the process and particularly their experience of the decisions they were expected to make on their child's behalf. Qualitative research into the experiences of patients and carers could also include quantitative data, such as service satisfaction scales (e.g. the Experience of Service Questionnaire (ESQ)[356]). In addition to interviews with young people who have been hospitalised involuntary it would also be interesting to include interviews with young people who had been hospitalised voluntarily under parental consent, so that their experiences could be compared. Alongside interviews with patients and carers, interviews with clinicians would help to understand more about how decisions to use involuntary are made. There is some evidence from the UK that in adults these decisions are impacted by availability of alternative services and the presence of professionals other than the assessing team,[357] but to my knowledge there has not been any research into this in children and adolescents.

In order to understand more about the factors driving the ethnic inequalities in use of involuntary hospitalisation among children and adolescents, it is important to ensure that future research in this field has large enough samples of ethnic minority groups to avoid the amalgamation of ethnicity into non-representative groups, as well as enough majority group samples of young people and their parents/carers, to enable direct comparisons between the

groups about their experiences of involuntary hospitalisation. In order to understand the persistent disparities in access to non-coercive care among racial and ethnic minority groups, this work needs to include consideration of racism and how it might intersect with mental illness stigma to exacerbate mental illness and influence care pathways.[358] It is also essential that measures of socioeconomic disadvantage on an individual and population level are included in further research in this field to enable an understanding of how socioeconomic disadvantage may interact with the other variables I have identified and influence involuntary hospitalisation among children and adolescents.

For adults we know that engagement in crisis services and crisis planning/advance directives can help reduce the rate of psychiatric hospitalisations,[359–362] but further research is needed to understand which interventions would help to prevent involuntary hospitalisations among young people. One of the ways in which this could be investigated would be through the development of an intervention for children and adolescents at high risk of involuntary hospitalisation (eg. older adolescents, from Black groups with a diagnosis of psychosis) which could be implemented in specific areas, and rates of involuntary hospitalisation compared across areas where the intervention was, and was not, being used. This could take the form of a mixed-methods pilot trial and use a psychological intervention like the one currently being investigated in the Development, Feasibility Testing and Pilot Trail of a Crisis Planning and Monitoring intervention to Reduce Compulsory Hospital (the FINCH study).[363] This intervention is based on a Swiss crisis planning approach which has only been tested on adults aged 18-65,[364] but this, or a similar approach, could be adapted for use in older adolescents, with the support of young people with lived experience of mental health difficulties and their parents/carers.

Finally, understanding more about the use of involuntary hospitalisations among children and adolescents internationally is another area where further research could be extremely important. Understanding the differences between mental health legislation internationally could help to clarify which factors help to reduce the use of coercion where rates of involuntary hospitalisation are low, which could inform the development of better mental health legislation models to be used worldwide.

10.5 Potential clinical and policy implications

There is a strong, international impetus to reduce the use of coercive practice in psychiatry. The first stage of this needs to be better basic data collection, nationally and ideally also internationally. In the UK, despite the widespread use of electronic health records, the centralised collection of Mental Health Act use remains unreliable and inaccurate, especially with respect to children and adolescents.[113] Better centralised data collection should also include children and adolescents who are in hospital voluntarily, and whether the admission is based on their own consent, or the consent of a parent/guardian. This would help to clarify the proportion of patients who are in hospital voluntarily and involuntarily, as this information is currently reported differently in different data sources and varies greatly.[305] Better data collection would enable us to track the use of involuntary hospitalisation across the country (and potentially, eventually, internationally), identify areas where it may be being used more or less frequently, as well as monitor changes in use over time. This also needs to be better aggregated so that we can know more about who is being detained and why.

Alongside improved data on the frequency of involuntary hospitalisations, a second policy recommendation would be the need to collect data on both the short- and long-term outcomes of an involuntary hospitalisation. This would need to include clinical, social and educational outcomes, as well as patient experiences of involuntary detention in the short and long-term. There is currently very little evidence justifying the use of involuntary hospitalisation,[365] and yet it is widely used worldwide, and in some areas, its use is increasing.[14] Evidence of some beneficial outcomes, if present, would make it easier to justify to patients and their families, and if appropriately shared and explained may help to improve patient experiences.

Understanding who is most at risk of being hospitalised involuntary is important in order to know where interventions to reduce coercion should be targeted. The research in this thesis has confirmed that there are factors impacting the risk of involuntary hospitalisation on an individual, service and area/structural level, all of which need to be addressed if we are to reduce the use of involuntary hospitalisation.

On an individual level, the use of crisis planning interventions, engagement in crisis services and advanced directives have been found to reduce the risk of involuntary hospitalisation

among adults, particularly those with psychosis and bipolar affective disorder.[283,366–368] Assessing whether these are also effective in children and adolescents, as well as adults who have previously been involuntarily detained, should be a research and policy priority. If they are effective, it will be important to ensure that there are resources and structures in place to enable these to be offered consistently, and their impact monitored appropriately.

On a service level, investment into services which may offer alternatives to inpatient care, such as crisis houses, acute day units and intensive home treatment teams is needed, as is greater understanding about what services would help to prevent mental health crises escalating before an involuntary inpatient admission becomes a necessity.[369] This is particularly important for children and adolescents who are among the most vulnerable to mental health problems, but are also potentially the most treatable.[282] Ensuring that people from ethnic minority groups, of all ages, have access to appropriate, accessible and equitable community mental health services is another research and policy priority. Alongside ensuring that services are specifically designed to meet the needs of people from ethnic minority groups, they should also ensure that staff who make decisions about involuntary hospitalisation receive regular implicit bias training (ideally alongside monitoring on the impact of this on rates of involuntary hospitalisation), to ensure that they are providing equitable care, based on mental health need without potential bias based on gender or ethnicity, or other factors.[357] This needs to include clinicians working with children and adolescents. In addition, the development of standardised tools for the assessment of risk and insight which can be used in people of all ages, ideally designed in collaboration with people with lived experience and completed in conjunction with patients, could help ensure that there is more conformity in these assessments across hospitals and regions.[85,313,370]

On a structural level it is essential that proper attention is paid to the socio-economic factors under-pinning mental ill-health, including racism and poverty. These social determinants of health clearly impact not only the risk of becoming mentally unwell and the risk for involuntary hospitalisation, but involuntary hospitalisation itself seems to contribute to the perpetuation of negative cycles and poor health care provision for the most vulnerable in society. There are a growing number of interventions aimed at addressing inequalities in use of involuntary hospitalisation, such as the Patient and Carer Race Equality Framework (PCREF) in the UK which, “exists to eliminate the unacceptable racial disparity in the access,

experience and outcomes that Black communities face and to significantly improve their trust and confidence in mental health services."[371] My findings demonstrate that these interventions must expand their remits and provisions to include children and adolescents, whose experiences of racism and inequality of access to services have not previously been the focus of research or policy attention. With commitment to address these health inequalities on a national and international level, it is conceivable that the need for coercive practices would be dramatically reduced for people of all ages.

Mental health legislation aims to provide a framework which ensures that people who are too mentally unwell to keep themselves or others safe are supported and treated for as long as is needed for them to become mentally well and able to make decisions for themselves. However, alongside the severity of someone's mental illness and their perceived risk, there are other factors which influence whether a person is hospitalised involuntarily rather than voluntarily, including their socioeconomic status, their ethnicity, how they came into hospital, and their access to alternative services. My thesis findings suggest that marginalised people of all ages who are exposed to greater social disadvantage are not only more likely to become mentally unwell but are less likely to access appropriate and timely community support and are more likely to be subject to coercive psychiatric treatment. The clear inequity between those who are hospitalised involuntarily and voluntarily, whether they are over or under 18, demonstrates that the way mental health legislation is currently being applied may be contributing to and maintaining cycles of disadvantage. Only by addressing the current inequalities in its use can involuntary hospitalisation be truly compatible with modern human rights standards, and this will require targeted improvements to child and adult community mental health services, recognition of the need to address the social determinants of health across the life course, alongside the creation of new human-rights based mental health legislation which is both compassionate and proportionate.

10.6 Conclusions

I have introduced the philosophical, ethical, and historical context of involuntary hospitalisation and presented the current human rights debate about whether its use is ever justifiable. I have conducted two systematic reviews, meta-analyses, and narrative synthesis into risk factors for involuntary hospitalisation from childhood to adulthood. I have also used administrative data to further investigate the factors associated with involuntary

hospitalisation among children and adolescents, and how these factors interact. Previous data on the risk factors for involuntary hospitalisation among adults was inconclusive, and there has been extremely little research into the use of involuntary hospitalisation among children and adolescents. The finding that the ethnic inequalities in use of involuntary hospitalisation which have long been recognised in adults, also appear to exist among children and adolescents, even when adjusting for other social, clinical, and service factors, has important implications for research, policy, and clinical practice. It is hoped that greater understanding about the factors associated with involuntary hospitalisation among children, adolescents and adults and the systemic factors underlying these, will contribute to the development of interventions to reduce involuntary hospitalisation, the creation of more equitable pathways to psychiatric care for patients of all ages, and ultimately a reduction in long-standing healthcare inequalities.

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Appendix A: Adult systematic review (Chapter 4)

1. Search strategies

Full search strategies: Social and clinical risk factors of involuntary psychiatric hospitalisation
Summary
Date of search 21-May-2018
• MEDLINE, n=2025
• PsycINFO, n=1954
• Embase, n=1799
• Cochrane Library, n=452
Total=6231
De-duplicated, to screen, n=4783
Search Strategies
1. Ovid MEDLINE(R) Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) <1946 to Present>
Search Strategy:
---
1 exp Mental Health Services/ (87849)
2 Emergency Services, Psychiatric/ (2321)
3 Hospitals, psychiatric/ or Psychiatry Department, Hospital/ (24388)
4 (psychiatr* adj3 (admission* or admitt* or readmi* or re-admi* or hospitali* or in-patients or inpatients)).ti,ab,kf. (13223)
5 Mentally Ill Persons/ (5848)
6 mental health/ or mental disorders/ (176779)
7 (((mental or psychiatr*) adj (health or disorder* or disease* or deficien* or illness* or problem*)) or psychotic or psychosis or psychoses or psychopath* or schizo* or SMI or personality disorder* or bipolar or ((suicid* or self-harm) adj3 (risk or crisis or crises))).ti,ab,kf. (452804)
8 exp "schizophrenia spectrum and other psychotic disorders"/ (138078)
9 Substance related disorders/ (89201)
10 Forensic Psychiatry/ (8681)
11 or/1-10 (693137)
12 "Commitment of Mentally Ill"/ (6618)
13 Involuntary Treatment/ (7)
14 commitment.ti. (6075)
15 ((psychiatr* or mental* or psychos* or schizo*) adj3 commit*).ti,ab,kf. (1189)
16 ((commitment or restriction or court) adj2 order?).ti,ab,kf. (635)
17 ((mental health adj (act? or jurisdiction or law? or legal* or legislat*)) and (admission* or admitt* or readmi* or re-admi* or hospitali* or in-patients or inpatients or commit* or detain* or detention* or section* or treat* or care)).mp. (1315)
18 ((compulsory or forced or involunt* or in-volunt* or mandat*) adj3 (admission* or admitt* or readmi* or re-admi* or hospitali* or in-patients or inpatients or commit* or detain* or detention* or
section* or treat* or care)).ti,ab,kf. (7857)
19 or/12-18 (19859)
20 RISK FACTORS/ (724861)
21 SEX FACTORS/ (243806)
22 AGE FACTORS/ (421753)
23 "SOCIAL DETERMINANTS of HEALTH"/ (1545)
24 SOCIOECONOMIC FACTORS/ (140517)
25 SOCIAL ENVIRONMENT/ (41015)
26 FAMILY CHARACTERISTICS/ or exp MARITAL STATUS/ (55688)

27 UNEMPLOYMENT/ (6332)
28 POVERTY AREAS/ or POVERTY/ (38358)
29 VIOLENCE/ or AGGRESSION/ (56317)
30 ETHNIC GROUPS/ (56505)
31 ANCESTRY GROUP.hw. (137098)
32 RELIGION/ (13387)
33 MINORITY GROUPS/ (12469)
34 HOMELESS PERSONS/ (6799)
35 ((characteristic* or correlat* or determinant* or factor* or predict* or relationship* or risk* or susceptib* or trajector*) adj3 (age? or gender* or ethnic* or family or social* or religion or religious or psychosocial* or socioeconomic* or socio-economic* or poverty or impover* or depriv* or disadvantaged or employment or unemploy* or homeless* or housing or urban* or suburban* or rural* or demograph* or agressi* or violen* or criminal*)).ti,ab,kf. (378110)
36 or/20-35 (1819518)
37 11 and 19 and 36 (1903)
38 *"Commitment of Mentally Ill"/ (4329)
39 (psychiatr* adj1 (involuntary or commitment)).ti. (124)
40 ((characteristic* or correlat* or determinant* or factor* or predict* or relationship* or risk* or reason? or role? or susceptib* or trajector*) adj5 (compulsory or forced or involunt* or in-volunt* or mandat*) adj5 (admission* or admitt* or readmi* or re-admi* or hospitali* or in-patients or inpatients or commit* or detain* or detention* or section* or treat* or care)).ti,ab,kf. (584)
41 exp mental disorders/ (1124033)
42 revolving door.mp. (294)
43 (38 and 36) or 39 or (40 and (11 or 41 or 42)) (1135)
44 37 or 43 (2235)
45 remove duplicates from 44 (2226)
46 (1983* or 1984* or 1985* or 1986* or 1987* or 1988* or 1989* or 199* or 20*).yr,dp,dt,ep,ez. (22323298)
47 45 and 46 (2025)
****

2. Ovid PsycINFO <1806 to May Week 2 2018>
Search Strategy:
[As the scope of this database is already indicative of the population, the search is based on *involuntary*
treatment and *risk factors* only]
---
1 "Commitment (Psychiatric)"/ (1597)
2 Involuntary Treatment/ (1200)
3 ((psychiatr* or mental* or psychos* or schizo*) adj3 commit*).ti,ab,id. (2001)
4 ((mental health adj (act? or jurisdiction or law? or legal* or legislat*)) and (admission* or admitt* or readmi* or re-admi* or hospitali* or in-patients or inpatients or commit* or detain* or detention* or section* or treat* or care)).ti,ab,id. (1554)
5 ((compulsory or forced or involunt* or in-volunt* or mandat*) adj3 (admission* or admitt* or readmi* or re-admi* or hospitali* or in-patients or inpatients or commit* or detain* or detention* or
section* or treat* or care)).ti,id. (2061)
6 ((commitment or restriction or court) adj2 order?).ti,ab,id. (550)
7 legal detention/ (680)
8 or/1-7 (7106)
9 (characteristic* or correlat* or determinant* or factor* or predict* or relationship* or risk* or reason? or role? or susceptib* or trajector*).ti,id. (799493)

10 (1 or 2) and 9 (455)
11 Risk Factor/ (70525)
12 At Risk Populations/ (35694)
13 Predisposition/ (3523)
14 *Age Differences/ (53680)
15 exp *Sociocultural Factors/ or exp *Psychosocial Factors/ or exp *Socioeconomic Status/ (137964)
16 *Demographic Characteristics/ or exp *Sociocultural Factors/ (104023)
17 *Social Issues/ or exp *Homeless/ or *Poverty/ or exp *Social Discrimination/ or exp *Social Integration/ or *Unemployment/ (36516)
18 exp *Violence/ or *Antisocial Behavior/ (66253)
19 *Aggressive Behavior/ or *Conflict/ (33644)
20 *"Racial and Ethnic Differences"/ or exp *"Racial and Ethnic Groups"/ (96536)
21 *Religious Beliefs/ or *Religiosity/ or exp *Religious Affiliation/ or *Religion/ or *Religious Conversion/ (37095)
22 *Marriage/ or *"Marriage and Family Measures"/ or *Family Relations/ or *Family Structure/ or *Home Environment/ or *Marital Relations/ (49617)
23 Disadvantaged/ or Cultural Deprivation/ or exp Social Deprivation/ (15181)
24 *Intellectual Development Disorder/ or *Developmental Disabilities/ or *Cognitive Impairment/ or *Cognitive Ability/ (98389)
25 Social Environments/ or Poverty Areas/ or *Rural Environments/ or *Suburban Environments/ or *Urban Environments/ (29368)
26 *Client Characteristics/ (12356)
27 *Human Sex Differences/ (78319)
28 *Regional Differences/ (2023)
29 *Protective Factors/ (2824)
30 ((characteristic* or correlat* or determinant* or factor* or predict* or relationship* or risk* or susceptib* or trajector*) adj3 (age? or gender* or ethnic* or family or social* or religion or religious or psychosocial* or socioeconomic* or socio-economic* or poverty or impover* or depriv* or disadvantaged or employment or unemploy* or homeless* or housing or urban* or suburban* or rural* or demograph* or agressi* or violen* or criminal*)).ti,ab,id. (231745)
31 or/11-30 (867447)
32 8 and 31 (1577)
33 ((characteristic* or correlat* or determinant* or factor* or predict* or relationship* or risk* or reason? or role? or susceptib* or trajector*) adj5 (compulsory or forced or involunt* or in-volunt* or mandat*) adj5 (admission* or admitt* or readmi* or re-admi* or hospitali* or in-patients or inpatients or commit* or detain* or detention* or section* or treat* or care)).ti,ab,id. (440)
34 10 or 32 or 33 (2075)
35 (1983* or 1984* or 1985* or 1986* or 1987* or 1988* or 1989* or 199* or 20*).yr,an. (3782724)
36 34 and 35 (1954)
****

3. Ovid Embase <1974 to 2018 Week 21>
Search Strategy:
---
1 Mental Health Service/ (53160)
2 Psychiatric Emergency service/ (88)
3 Mental Hospital/ or Mental Patient/ (50837)
4 Psychiatric Department/ (7535)
5 (psychiatr* adj3 (admission* or admitt* or readmi* or re-admi* or hospitali* or in-patients or inpatients)).ti,ab,kw. (18505)
6 psychiatric.ti,kw,hw. and Hospital Patient/ (5284)

7 (((mental or psychiatr*) adj (health or disorder* or disease* or deficien* or illness* or problem*)) or psychotic or psychosis or psychoses or psychopath* or schizo* or SMI or personality disorder* or bipolar or ((suicid* or self-harm) adj3 (risk or crisis or crises))).ti,ab,kw. (570844)
8 Mental Health/ or Mental Disease/ (306988)
9 exp Psychosis/ (266698)
10 exp Personality Disorder/ (57342)
11 *Substance Abuse/ or *Drug Dependence/ (46014)
12 Forensic Psychiatry/ (12966)
13 or/1-12 (872750)
14 involuntary commitment/ (1061)
15 commitment.ti. (6847)
16 ((psychiatr* or mental* or psychos* or schizo*) adj3 commit*).ti,ab,kw. (1496)
17 ((commitment or restriction or court) adj2 order?).ti,ab,kw. (681)
18 ((mental health adj (act? or jurisdiction or law? or legal* or legislat*)) and (admission* or admitt* or readmi* or re-admi* or hospitali* or in-patients or inpatients or commit* or detain* or detention* or section* or treat* or care)).mp. (1791)
19 ((compulsory or forced or involunt* or in-volunt* or mandat*) adj3 (admission* or admitt* or readmi* or re-admi* or hospitali* or in-patients or inpatients or commit* or detain* or detention* or
section* or treat* or care)).ti,ab,kw. (10828)
20 or/14-19 (20558)
21 Risk Factor/ (873854)
22 High Risk Patient/ (109492)
23 *"Gender and Sex"/ or Sex Difference/ or Sex Ratio/ (411234)
24 Age Distribution/ (129326)
25 "Social Determinants of health"/ (3875)
26 Socioeconomics/ (133608)
27 Social Environment/ or Psychosocial Environment/ (34792)
28 Poverty/ or Social Status/ or Unemployment/ (128727)
29 Violence/ or exp *violence/ (93549)
30 *Aggression/ (21705)
31 "Ethnic or Racial Aspects"/ or Cultural Factor/ or Ethnic Difference/ or Ethnicity/ or Race/ or Race Difference/ (227002)
32 Ancestry Group/ (3156)
33 Religion/ or Religious Group/ (65528)
34 Marriage/ (52248)
35 Minority group/ (13798)
36 exp Homeless Person/ (894)
37 Vulnerable Population/ (12714)
38 Mental Capacity/ or Mental Ddeficiency/ or Intellectual Impairment/ (90993)
39 *Rural Population/ or *Suburban Population/ or *Urban Population/ or Urban Rural Difference/ or Geographic Distribution/ (175825)
40 ((characteristic* or correlat* or determinant* or factor* or predict* or relationship* or risk* or susceptib* or trajector*) adj3 (age? or gender* or ethnic* or family or social* or religion or religious or psychosocial* or socioeconomic* or socio-economic* or poverty or impover* or depriv* or disadvantaged or employment or unemploy* or homeless* or housing or urban* or suburban* or rural* or demograph* or agressi* or violen* or criminal*)).ti,ab,kw. (478727)
41 or/21-40 (2460643)
42 13 and 20 and 41 (2229)
43 *Involuntary Commitment/ (502)
44 (psychiatr* adj1 (involuntary or commitment)).ti. (150)

45 ((characteristic* or correlat* or determinant* or factor* or predict* or relationship* or risk* or reason? or role? or susceptib* or trajector*) adj5 (compulsory or forced or involunt* or in-volunt* or mandat*) adj5 (admission* or admitt* or readmi* or re-admi* or hospitali* or in-patients or inpatients or commit* or detain* or detention* or section* or treat* or care)).ti,ab,kw. (837)
46 exp Mental Disease/ (1987188)
47 *Hospital Readmission/ or revolving door.mp. (9699)
48 (43 and 41) or 44 or (45 and (13 or 46 or 47)) (594)
49 42 or 48 (2551)
50 (1983* or 1984* or 1985* or 1986* or 1987* or 1988* or 1989* or 199* or 20*).yr,dc,dp. (27829995)
51 49 and 50 (2372)
52 limit 51 to (article-in-press status or conference abstract status or embase status or inprocess status) (1799)
****

4. The Cochrane Library

• Cochrane Database of Systematic Reviews : Issue 5 of 12, May 2018
• Cochrane Central Register of Controlled Trials : Issue 4 of 12, April 2018
• Database of Abstracts of Reviews of Effect : Issue 2 of 4, April 2015
• Health Technology Assessment Database : Issue 4 of 4, October 2016
• NHS Economic Evaluation Database : Issue 2 of 4, April 2015

ID Search
#1 MeSH descriptor: [Commitment of Mentally Ill] this term only
#2 MeSH descriptor: [Involuntary Treatment, Psychiatric] this term only
#3 ((psychiatr* or mental* or psychos* or schizo*) near/3 commit*):ti,ab,kw (Word variations have been searched)
#4 ((commitment or restriction or court) near/2 order*):ti,ab,kw (Word variations have been searched)
#5 (mental health near/3 (act* or jurisdiction or law* or legal* or legislat*)):ti,ab,kw (Word variations have been searched)
#6 (admission* or admitt* or readmi* or re-admi* or hospitali* or in-patients or inpatients or commit* or detain* or detention* or section* or treat* or care):ti,ab,kw (Word variations have been searched)
#7 #5 and #6
#8 ((compulsory or forced or involunt* or in-volunt* or mandat*) near/3 (admission* or admitt* or readmi* or re-admi* or hospitali* or in-patients or inpatients or commit* or detain* or detention*
or section* or treat* or care)):ti,ab,kw (Word variations have been searched)
#9 #7 or #8
#10 MeSH descriptor: [Mental Disorders] explode all trees
#11 MeSH descriptor: [Mental Health Services] explode all trees
#12 MeSH descriptor: [Emergency Services, Psychiatric] this term only
#13 MeSH descriptor: [Hospitals, Psychiatric] this term only
#14 MeSH descriptor: [Psychiatric Department, Hospital] this term only
#15 (psychiatr* near/3 (admission* or admitt* or readmi* or re-admi* or hospitali* or in-patients or inpatients)):ti,ab,kw (Word variations have been searched)
#16 MeSH descriptor: [Mentally Ill Persons] this term only
#17 MeSH descriptor: [Mental Health] this term only
#18 (((mental or psychiatr*) next (health or disorder* or disease* or deficien* or illness* or problem*)) or psychotic or psychosis or psychoses or psychopath* or schizo* or SMI or "personality disorder*" or bipolar or ((suicid* or self-harm) near/3 (risk or crisis or crises)) or mania or manic or "substance use disorder*"):ti,ab,kw

#19 (addiction or "anorexia nervosa" or bulimi* or (self next (injur*)) or cyclothymic* or depression or depressive or "anxiety disorder*" or agoraphobia or "obsessive compulsive" or panic or phobi* or PTSD or "posttrauma* stress" or "post trauma* stress" or neurosis or neuroses or hysteria or hysterical):ti,kw
#20 #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19
#21 (#9 and #20)
#22 (characteristic* or correlat* or determinant* or factor* or predict* or relationship* or risk* or reason? or role? or susceptib* or trajector*):ti,ab,kw (Word variations have been searched)
#23 #21 and #22
#24 #1 or #2 or #3 or #4 or #23
#25 MeSH descriptor: [Forensic Psychiatry] explode all trees
#26 #25 and (#6 or #22)
#27 #24 or #26
Date Limited: 1983 to date
****

Appendix A: Adult systematic review (Chapter 4)

2. Studies included in the meta-analysis

Author and date	Sample size
Aguglia 2016	730
Balducci 2017	848
Blank 1989	274
Bonsack 2005	87
Bruns 1991	628
Canova 2018	137
Casella 2014	169
Chang 2013	2289
Chiang 2017	26611
Cole 1995	93
Cougnard 2004	86
Craw 2006	227
Crisanti 2001	1718
De Girolamo 2009	1548
Di Lorenzo 2018	396
Folnegovic-Smalc 2000	888
Garcia Cabeza 1998	396
Gou 2014	160
Gultekin 2013	504
Hatling 2002	13985
Hoffman 2017	213595
Hotzy 2019	31508
Hustoft 2013	3326
Ielmini 2018	200
Indu 2016	300
Isohanni 1990	1586
Iverson 2002	223
Kelly 2004	78
Kelly 2018	2940
Lastra Marinez 1993	296
Lay 2011	9698
Lebenbaum 2018	115515
Leung 1993	44
Luo 2019	155
Malla 1987	5729
Manderelli 2014	60
Montemagni 2011	119
Mykelbust 2012	1963
Okin 1996	198
Olajide 2016	2087
Opjordsmoen 2010	217
Opsal 2011	1187
Polacheck 2017.1	5411
Riecher 1991	10749
Ritsner 2014	439
Rodrigues 2019	5191
Rooney 1996	101
Schepbach 2008	1374
Schuepbach 2005	86

Silva 2018	5027
Spengler 1986	206
Stylianidis 2017	715
Torrissen 20017	104
Wang 2015	2777
Watson 2000	397
Weich 2017	104647

	Clear objective?	Study design appropriate?	Method of comparison group selection appropriate?	Group characteristics sufficiently described?	Outcome and exposure measure well defined?	Sample size appropriate	Analytic methods described and justified?	Variance reported?	Controlled for confounding?	Results reported in sufficient detail?	Conclusions supported by the results?	Total	Linear Score	Quality rating
Aguglia 2016	2	2	2	2	2	2	1	1	0	1	1	16	72.73	M
Balducci 2017	2	2	2	1	2	2	2	2	1	2	2	20	90.91	H
Bauer 2007	2	2	2	2	2	2	1	2	1	1	1	18	81.82	H
Beck 1984	1	2	1	0	1	1	1	0	0	0	1	8	36.36	L
Bindman 2002	2	2	1	1	1	2	1	1	2	1	1	15	68.18	M
Blank 1989	2	2	2	1	2	1	1	2	0	2	2	17	77.27	H
Bonsack 2005	1	1	1	1	1	0	0	0	0	0	1	6	27.27	L
Bruns 1991	1	1	1	0	1	1	0	0	0	0	1	6	27.27	L
Burnett 1999	2	1	2	2	2	1	1	0	0	1	1	13	59.09	M
Canova 2018	2	1	2	2	1	1	2	2	1	2	2	18	81.82	H
Casella 2014	2	2	2	1	1	1	1	2	0	1	1	14	63.64	M
Chang 2013	2	1	1	1	0	1	0	1	0	1	1	9	40.91	L
Chiang 2017	2	2	2	1	1	2	1	2	2	1	1	17	77.28	H
Cole 1995	1	1	1	1	1	1	1	1	0	1	1	10	45.45	M
Cougnard 2004	2	2	2	2	1	1	2	2	2	2	1	19	86.36	H

Craw 2006	2	2	2	2	2	1	1	2	1	1	1	17	77.27	H
Cristanti 2001	2	2	2	0	2	2	2	2	2	1	1	18	81.82	H
Curley 2016	2	2	1	1	1	2	2	2	2	2	1	18	81.82	H
de Girolamo 2009	2	2	2	2	1	1	1	1	0	1	2	15	68.18	M
Delayahu 2014	2	1	1	1	0	1	1	1	0	1	1	10	45.45	M
Di Lorenzo 2018	1	1	1	1	2	1	1	2	0	1	1	12	54.55	M
Donisi 2016	2	2	2	1	2	2	2	2	1	2	2	20	90.91	H
Emons 2014	2	2	2	0	2	2	1	2	0	1	1	15	68.18	M
Eytan 2012	1	1	1	1	1	1	1	2	2	1	1	13	59.09	M
Fok 2014	2	2	2	1	2	2	2	2	2	2	2	21	95.45	H
Folnegovic-Smalc 2000	2	1	2	1	1	1	2	2	1	2	1	16	72.73	M
Gaddini 2008	1	2	2	2	1	2	1	0	0	1	2	14	63.64	M
Garcia Cabeza 1998	2	1	1	2	2	1	1	0	0	1	1	12	54.55	M
Gou 2014	2	2	2	2	2	1	1	2	2	1	1	18	81.82	H
Gultekin 2013	2	1	2	2	2	1	1	2	0	2	2	17	77.27	H
Hansson 1999	2	1	1	0	2	2	1	2	1	2	2	16	72.73	M
Hatling 2002	0	1	1	1	2	1	2	1	1	1	2	13	59.09	M

Hoffman 2017	1	2	1	1	2	2	1	1	1	1	1	14	63.64	M
Hotzy 2019	1	1	1	1	2	2	1	2	0	1	1	13	59.09	M
Houston 2001	1	0	0	0	1	1	0	0	1	0	1	5	22.73	L
Hugo 1998	1	1	2	0	0	1	0	1	0	1	1	8	36.36	L
Hustoft 2013	2	2	2	1	2	2	1	2	0	1	1	16	72.73	M
Ielmini 2018	1	2	1	1	1	1	1	0	0	1	1	10	45.45	M
Indu 2016	2	2	1	1	2	2	1	2	2	0	0	15	68.18	M
Isohanni 1990	2	1	0	1	2	1	2	2	2	0	1	14	63.64	M
Iverson 2002	2	2	2	1	1	1	1	2	1	1	1	15	68.18	M
Kelly 2004	2	1	2	0	0	1	2	1	2	1	1	13	59.09	M
Kelly 2018	1	1	2	2	2	2	0	1	0	2	2	15	68.18	M
Keown 2016	2	1	2	0	1	1	2	2	2	2	2	17	77.27	H
Lastra Martinez 1993	2	2	2	2	2	1	2	1	0	1	1	16	72.73	M
Lay 2011	1	1	1	0	0	1	2	2	2	1	1	12	54.55	M
Lebenbaum 2018	2	2	1	1	2	2	2	2	2	2	2	20	90.91	H
Leung 1993	0	1	1	2	1	0	1	1	0	2	1	10	45.45	M
Lin 2018	1	2	1	1	0	2	1	1	0	0	1	10	45.45	M
Lorant 2007	1	2	2	2	2	2	2	2	2	2	1	20	90.91	H
Luo 2019	2	1	2	2	1	1	1	1	1	1	1	14	63.64	M
Malla 1987	1	1	2	1	2	1	0	0	1	1	1	11	50.00	M

Mandarelli 2014	2	1	2	2	2	1	2	2	0	1	1	16	72.73	M
Montemagni 2011	2	2	2	1	2	0	1	2	1	1	2	16	72.70	M
Montemagni 2012	1	2	2	1	2	0	1	1	1	1	1	13	59.10	M
Mykelbust 2012	2	1	0	1	0	2	1	2	0	1	1	11	50.00	M
Okin 1996	1	1	1	1	0	1	0	0	0	1	1	7	31.82	L
Olajide 2016	2	2	2	1	1	1	2	1	1	1	2	16	72.70	M
Opjordsmoen 2010	2	2	2	1	0	1	1	1	0	2	2	14	63.64	M
Opsal 2011	2	1	2	1	0	1	1	1	1	1	1	12	54.55	M
Polacheck 2017	1	0	0	0	1	0	0	0	0	0	0	2	9.10	L
Riecher 1991	2	2	1	1	1	2	2	1	0	1	1	14	63.60	M
Ritsner 2014	1	1	1	0	1	1	1	1	0	0	0	7	31.82	L
Rodrigues 2019	2	2	2	2	1	2	2	2	2	2	2	21	95.45	H
Rooney 1996	1	1	0	0	0	0	1	0	0	0	1	4	18.20	L
Schmitz-Buhl 2019	1	1	1	2	2	1	2	1	2	1	2	16	72.73	M
Schuepbach 2005	2	2	2	2	1	1	1	2	0	2	1	16	72.73	M
Schuepbach 2008	1	2	2	1	0	1	1	2	2	1	1	14	63.64	M

Serfaty and McCluskey 1998	1	1	0	0	2	0	0	0	0	1	1	6	27.27	L
Silva 2018	2	2	2	2	2	2	2	2	2	2	2	22	100.00	H
Spengler 1986	2	2	2	1	2	2	2	0	2	2	2	19	86.36	H
Stylianidis 2017	2	2	2	2	1	1	2	2	2	1	1	18	81.82	H
Tørrissen 2007	1	1	1	1	0	1	0	0	0	0	0	5	22.73	L
Van der post 2009	2	2	2	1	1	1	0	2	2	1	1	15	68.18	M
Wang 2015	1	1	1	1	1	1	1	2	2	1	1	13	59.09	M
Watson 2000	1	1	1	0	1	1	1	1	0	1	1	9	40.91	L
Weich 2017	2	2	2	2	2	2	2	2	2	2	2	22	100.00	H

3. Quality assessment table

Appendix A: Adult systematic review (Chapter 4)

4. Funnel Plots

Figure 4. Housing

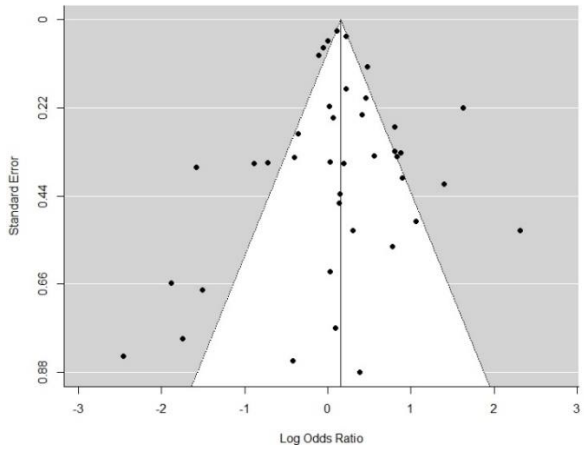


Figure 4. Relationship

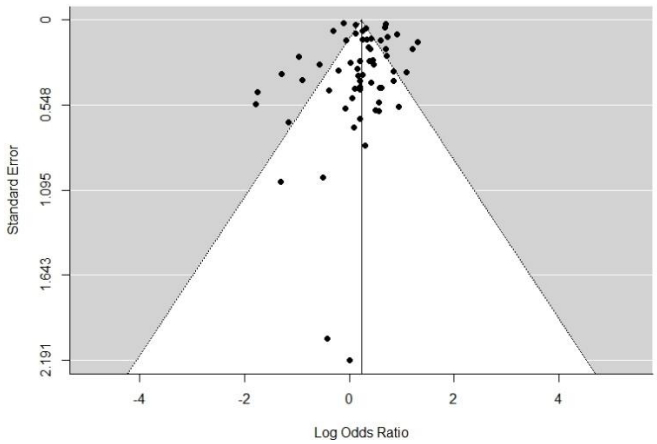


Figure 4. Previous involuntary admission

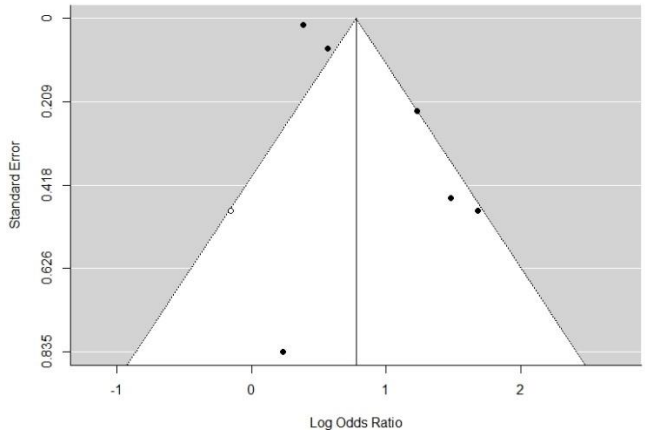
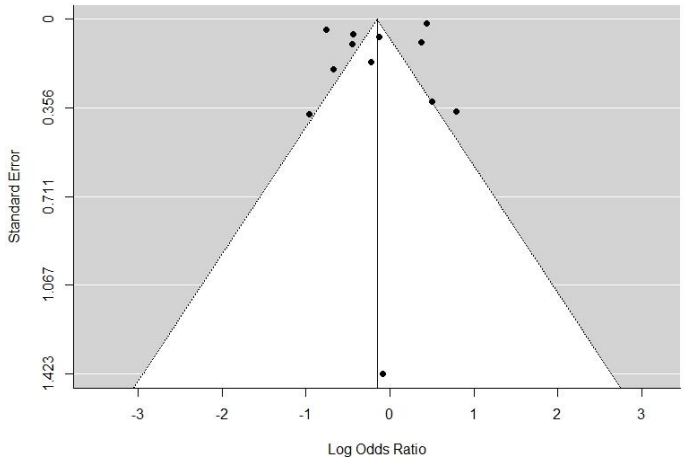


Figure 4. Previous admission (legal status not specified)



Appendix B: Systematic review children and adolescents

1. Search terms

Embase

1. Mental Health Service/
2. Psychiatric Emergency service/
3. Mental Hospital/ or Mental Patient/
4. Psychiatric Department/
5. (psychiatr* adj3 (admission* or admitt* or readmi* or re-admi* or hospitali* or in-patients or inpatients)).ti,ab,kw.
6. psychiatric.ti,kw,hw. and Hospital Patient/
7. ((mental or psychiatr*) adj (health or disorder* or disease* or deficien* or illness* or problem*)).ti,ab,kw.
8. Mental Health/ or Mental Disease/
9. or/1-8
10. involuntary commitment/
11. commitment.ti.
12. ((psychiatr* or mental* or psychos* or schizo*) adj3 commit*).ti,ab,kw.
13. ((commitment or restriction or court) adj2 order?).ti,ab,kw.
14. ((mental health adj (act? or jurisdiction or law? or legal* or legislat*)) and (admission* or admitt* or readmi* or re-admi* or hospitali* or in-patients or inpatients or commit* or detain* or detention* or section* or treat* or care)).mp.
15. ((compulsory or forced or involunt* or in-volunt* or mandat*) adj3 (admission* or admitt* or readmi* or re-admi* or hospitali* or in-patients or inpatients or commit* or detain* or detention* or section* or treat* or care)).ti,ab,kw.
16. or/10-15
17. child*.mp.
18. infan*.mp.
19. adolescen*.mp.
20. exp adolescence/
21. exp childhood/
22. exp infancy/
23. or/17-22

24. 9 and 16 and 23

Psychinfo

1. exp "Commitment (Psychiatric)"/ or "Commitment (Psychiatric)".mp.
2. Involuntary Treatment/
3. ((psychiatr* or mental* or psychos* or schizo*) adj3 commit*).ti,ab,id.
4. ((mental health adj (act? or jurisdiction or law? or legal* or legislat*)) and (admission* or admitt* or readmi* or re-admi* or hospitali* or in-patients or inpatients or commit* or detain* or detention* or section* or treat* or care)).ti,ab,id.
5. ((compulsory or forced or involunt* or in-volunt* or mandat*) adj3 (admission* or admitt* or readmi* or re-admi* or hospitali* or in-patients or inpatients or commit* or detain* or detention* or section* or treat* or care)).ti,id.
6. ((commitment or restriction or court) adj2 order?).ti,ab,id.
7. legal detention/
8. or/1-7
9. child*.mp.
10. adolescen*.mp.
11. teen*.mp.
12. infan*.mp.
13. or/9-12
14. 8 and 13

Appendix B: Systematic review children and adolescents

2. Quality assessment scores

Author and year	Question/ Objective sufficientl y described	Study design evident and appropriate	Method of subject/ comparison group selection described and appropriate	Subject characteristics sufficiently described	Outcome and exposure measure(s) well defined and robust to measurement/ misclassification bias	Sample size appropriate	Analytic methods described/ justified and appropriat e	Some estimate of variance reported for the main results	Controlled for confounding	Results reported in sufficient detail	Conclusion s supported by the results	Tota l	Linear Score	Quality rating
Ayton 2009	1	1	2	2	1	1	2	2	0	1	2	15	68.18	MODERA TE
Chaplin 2015	2	2	1	1	2	1	2	2	0	1	2	16	72.72	MODERA TE
Corrigall 2013	2	2	1	1	1	1	2	2	0	1	2	15	68.18	MODERA TE
Ellila 2008	2	1	1	2	1	2	1	2	2	1	2	17	77.27	HIGH
Jaworowski 1995	1	1	1	1	1	1	1	0	0	1	1	9	40.90	LOW
Jendreyschak 2013	2	2	2	1	2	2	2	2	1	2	2	20	90.90	HIGH
Kaltiala-Heino 2004	2	2	2	1	2	2	2	2	0	2	2	19	86.36	HIGH
Kaltiala-Heino 2010	2	2	2	2	2	1	1	2	2	2	2	20	90.90	HIGH
Khenissi 2004	2	1	2	2	1	1	1	1	0	1	2	14	63.63	MODERA TE
Kilgus 1995	1	1	1	1	1	1	1	1	1	2	2	13	59.09	MODERA TE
Laget 2002	1	1	1	1	1	1	0	0	0	2	1	9	40.90	LOW
Lindsey 2010	2	2	1	2	2	2	2	2	2	2	2	21	95.45	HIGH
Mears 2003	1	1	1	1	1	1	1	0	0	1	1	9	40.90	LOW
Mertons 2017	1	1	1	1	1		0	1	0	2	1	9	40.90	LOW
Ottisova 2018	2	2	2	2	1	1	2	2	2	2	1	19	86.36	HIGH
Park 2011	1	2	1	2	2	1	1	0	0	1	1	12	54.54	MODERA TE
Persi 2016	2	2	2	1	1	2	1	0	0	1	2	14	63.63	MODERA TE
Ramel 2015	1	2	2	1	1	1	2	0	0	1	1	12	54.54	MODERA TE
Siponen 2007	2	1	2	1	1	2	2	1	0	1	2	15	68.18	MODERA TE
So 2019	2	2	1	2	2	1	2	2	2	1	2	19	86.36	HIGH

Souranda 1998	1	2	1	1	1	2	2	2	0	1	1	14	63.63	MODERATE
Stein 1988	1	0	1	0	2	1	1	0	0	1	1	8	36.36	LOW
Tolmac 2004	2	1	2	1	1	1	1	1	0	1	1	12	54.54	MODERATE

Appendix B: Systematic review children and adolescents

3. Funnel plots

Fig 5. Risk to others

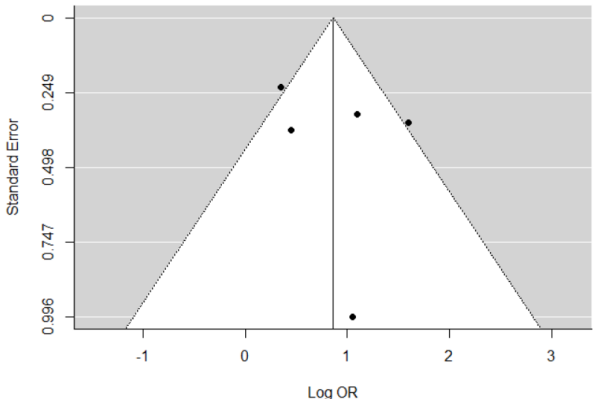


Fig 5. Risk to self

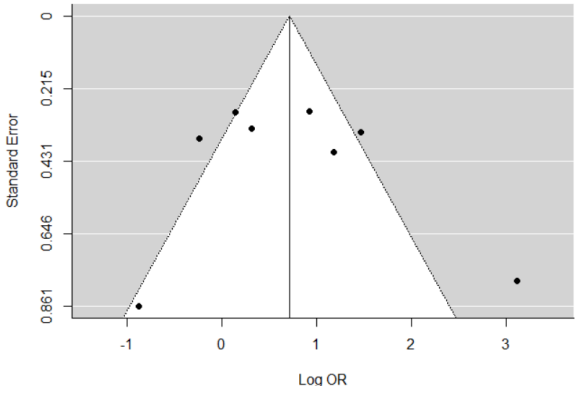
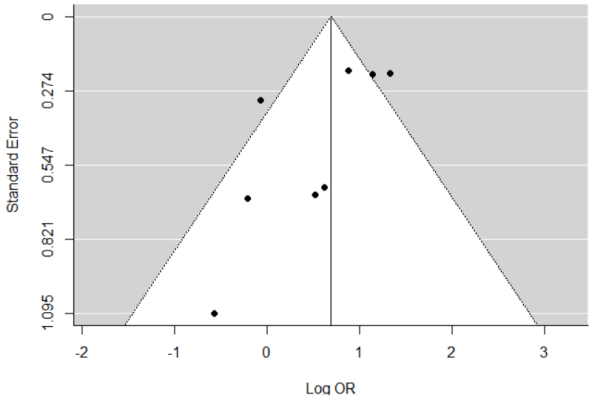


Fig 5. Previous abuse



5.15: Previous admission