

This work is protected by copyright and other intellectual property rights and duplication or sale of all or part is not permitted, except that material may be duplicated by you for research, private study, criticism/review or educational purposes. Electronic or print copies are for your own personal, non-commercial use and shall not be passed to any other individual. No quotation may be published without proper acknowledgement. For any other use, or to quote extensively from the work, permission must be obtained from the copyright holder/s.

Investigating the use of stratified primary care for older adults with musculoskeletal pain: a mixed methods study

Hollie Birkinshaw

A thesis submitted for the degree of Doctor of Philosophy

June 2021

Keele University



Abstract

Introduction

Musculoskeletal pain is common in older adults (aged ≥ 65), but current assessment and management in primary care is suboptimal. Prognostic stratified care matches treatment options to patients based upon their risk of persistent pain six months post-consultation. The aim of this thesis was to investigate the use of stratified care in the management of musculoskeletal pain for older adults.

Methods

This thesis was nested within the STarT MSK trial. A sequential mixed methods design (quantitative followed by qualitative) was employed following a review of the literature. Firstly, secondary data analysis was undertaken to investigate differences in older adults' clinical profiles and the discriminant and predictive validity of the STarT MSK Tool by age. Secondly, 21 interviews with 16 older adults and focus groups with a total of 14 GPs and two physiotherapists were conducted to explore complexity, the elements of a good consultation, and treatment options.

Findings

Quantitative analysis found no significant differences between older (≥ 65) and younger (< 65) adults in pain intensity; however older adults reported significantly better mental health, worse physical function, and a higher average number of comorbidities. For older adults, the STarT MSK Tool had poor to acceptable predictive validity when used at point of consultation.

Qualitative analysis identified three themes: negotiation, reassurance and age-specific clinician concerns. Integration of stratified care into primary care consultations was acceptable; there were no reports of significant disruption. Dissonance between clinicians' and older adults' perspectives were identified regarding mental health, treatment options

and acceptance of musculoskeletal pain, requiring negotiation to resolve. Affective and clinical reassurance can facilitate these negotiations for satisfactory outcomes. Clinicians also voiced concerns about managing older adults' comorbidities, polypharmacy, social situation within the constraints of stratified care and the current health system; notably, the lack of social and community focused treatment options.

Conclusion

Stratified care is acceptable and useful for both patients and clinicians for older adults with musculoskeletal pain. It is important that consultations utilising stratified care maximise non-clinical aspects such as communication, reassurance, shared decision-making and empathy, especially where there are clinical complexities to be addressed. It is essential that the discriminant and predictive validity of the STarT MSK Tool is investigated further, to ensure high validity across all age categories. Additionally, incorporation and strengthening of social prescribing treatment options for older people is essential.

Table of contents

Abstract.....	i
Table of contents	iii
Declaration	viii
Acknowledgements	ix
List of abbreviations.....	xi
Chapter One: Background.....	1
Thesis introduction	1
1.1 Chapter introduction.....	1
1.2 Definition of 'older adult'	1
1.3 Musculoskeletal pain in older adults.....	2
1.4 Impact of musculoskeletal pain upon older adults	3
1.4.1 Physical impact	3
1.4.2 Psychological impact.....	5
1.4.3 Social impact	7
1.5 Biopsychosocial approach to pain	8
1.6 Wider impact of musculoskeletal pain in older adults	11
1.6.1 Older adult policies and guidelines	13
1.6.2 Socio-economic impact	14
1.7 Musculoskeletal pain in primary care	15
1.7.1 Assessment of musculoskeletal pain in older adults	16
1.7.2 Management of musculoskeletal pain in older adults.....	17
1.8 Stratified care	20
1.8.1 Stratified care research	21
1.8.2 Stratified care for musculoskeletal pain and older adults	24
1.9 Thesis aim	25
1.10 STarT MSK and nesting of the PhD	25
1.11 Summary	31
1.12 Thesis overview	31
1.13 Style of thesis.....	32
Chapter Two: Literature review.....	33
2.1 Introduction.....	33
2.2 Aim of literature review	33
2.3 Prognosis	34
2.3.1 Prognosis and musculoskeletal pain in the context of older adults.....	36
2.3.2 Prognostic tools for musculoskeletal pain in primary care	37
2.3.3 Prognostic tools for older adults.....	39

2.4 Implementing stratified care for musculoskeletal pain	47
2.5 Perceptions of musculoskeletal pain in older adults	54
2.5.1 Describing pain.....	54
2.5.2 Perceptions of the causes of pain.....	55
2.6 Primary care consultations for older adults with musculoskeletal pain.....	57
2.6.1 The decision to consult.....	57
2.6.2 Expectations of the consultation	59
2.6.3 During the consultation.....	60
2.7 Treatment options	62
2.7.1 Self-management and coping	63
2.7.2 Analgesia	66
2.7.3 Physical activity and exercise	68
2.7.4 Psychological interventions.....	70
2.8 Summary	71
2.9 Implications and gaps in the literature	71
2.10 Aim and research questions	73
Chapter Three: Methodology and methods.....	75
3.1 Chapter introduction and context.....	75
3.2 Philosophical underpinnings	75
3.2.1 Pragmatism	76
3.2.2 Pragmatism and this study.....	78
3.3 Mixed methods.....	80
3.3.1 Mixed methods and pragmatism.....	80
3.3.2 Mixed methods design	81
3.4 Quantitative methods	85
3.5 Qualitative methods	86
3.5.1 Qualitative approach	87
3.5.2 Qualitative methods.....	87
3.5.3 Sampling.....	88
3.5.4 Recruitment	89
3.5.5 Data collection	91
3.5.6 Data saturation	94
3.5.7 Ethics	96
3.5.8 Reflexivity	98
3.6 Qualitative analysis	99
3.6.1 Thematic Analysis	99
3.6.2 Constant comparison methods	102
3.7 Patient and Public Involvement and Engagement (PPIE).....	103
3.8 Chapter conclusion	104

Chapter Four: The clinical profiles of patients with musculoskeletal pain by age	106
4.1 Chapter introduction.....	106
4.2 Chapter context.....	106
4.3 Aim	108
4.4 Methods.....	108
4.4.1 Overview of the KAPS dataset.....	108
4.4.2 Variables.....	109
4.4.3 Analysis	109
4.5 Results for dichotomised age analyses	112
4.5.1 Differences between older adults and younger adults	112
4.5.2 Pain characteristics	116
4.5.3 Physical health characteristics	116
4.5.4 Psychosocial characteristics	116
4.6 Results of age category analyses.....	117
4.6.1 Descriptive results across age categories and risk subgroups	117
4.6.2 Pain characteristics	117
4.6.3 Physical health characteristics	121
4.6.4 Psychosocial characteristics	121
4.7 Key findings.....	122
4.8 Chapter conclusion	123
Chapter Five: The discriminant and predictive validity of the STarT MSK Tool across ages	124
5.1 Chapter introduction.....	124
5.2 STarT MSK Tool	124
5.3 Aim	125
5.4 Methods.....	125
5.4.1 Datasets and study populations.....	125
5.4.2 Variables used.....	127
5.5 Analysis plan	127
5.5.1 Descriptive statistics.....	127
5.5.2 Predictive and discriminant validity	128
5.5.3 Predictor variables.....	131
5.5.4 Outcome measures	131
5.6 Demographic results	131
5.7 Results for dichotomised age analyses	134
5.7.1 STarT MSK Tool answers.....	134
5.7.2 Risk stratification	136
5.7.3 Validity of the STarT MSK Tool.....	137
5.8 Results by age categories	143

5.8.1 STarT MSK Tool answers	143
5.8.2 Risk stratification	146
5.8.3 Validity of the STarT MSK Tool.....	147
5.9 Key findings.....	155
5.10 Implications for the thesis	156
Chapter Six: Interactions within the consultation	157
6.1 Chapter introduction.....	157
6.2 Participant overview	157
6.3 Negotiation	162
6.3.2 Mental health labels	162
6.3.3 Treatment options	171
6.3.4 Acceptance.....	177
6.4 Reassurance	181
6.4.2 Affective reassurance.....	181
6.4.3 Clinical reassurance	191
6.5 The interplay between negotiation and reassurance	200
6.6 Chapter conclusion	206
Chapter Seven: Age-specific clinician concerns.....	207
7.1 Chapter introduction.....	207
7.2 Overview of the main theme – ‘age-specific clinician concerns’	207
7.3 The ‘older adult’ label.....	207
7.4. Physical health considerations in addition to musculoskeletal pain.....	216
7.5 Awareness of a patient’s social situation.....	221
7.6. Issues with the health system.....	227
7.7 Chapter conclusion	233
Chapter Eight: Discussion.....	234
8.1 Chapter introduction.....	234
8.2 Discussion of thesis findings.....	235
8.2.1 Research Question 1	235
8.2.2 Research Question 2.....	241
8.2.3 Research Question 3.....	245
8.2.4 Research Question 4.....	254
8.2.5 Stratified care findings.....	258
8.2.6 Summary of findings.....	259
8.3 Implications for stratified care and clinical practice	261
8.4 Future research	264
8.5 Strengths and limitations.....	269
8.5.1 Strengths	269
8.5.2 Limitations.....	272

8.6 Reflections.....	275
8.7 Thesis conclusion.....	278
References.....	280
Appendices.....	304
Appendix 1: Ethical approval from NHS REC	304
Appendix 2: Patient invitation letter	307
Appendix 3: Patient information leaflet	308
Appendix 4: Consent form	310
Appendix 5: Topic guide: patient interviews	311
Appendix 6: Topic guide: clinician focus groups	313
Appendix 7: Reflexive contact form	313
Appendix 8: Examples of coding qualitative data.....	315
Appendix 9: Mind maps and thematic maps	319
Appendix 10: PPIE coding/noting activity	321
Appendix 11: KAPS baseline questionnaire	323
Appendix 12: KAPS six-month questionnaire.....	350
Appendix 13: TAPS baseline questionnaire	372
Appendix 14: TAPS six-month questionnaire	388
Appendix 15: Dissemination	401

Declaration

This thesis was nested within the STarT MSK main trial, which is part of the STarT MSK programme grant awarded by the National Institute for Health Research awarded to Professor Nadine Foster (reference: RP-PG-1211- 20010). The development, management, and running of the STarT MSK programme was undertaken by the STarT MSK study team and Keele Clinical Trials Unit. The design and development of this thesis was undertaken by myself and my supervisors.

For the quantitative analyses, data was collected by the STarT MSK study team and Keele Clinical Trials Unit. I analysed the data with statistical advice from Dr Martyn Lewis and Dr Paul Campbell. For the qualitative work, the recruitment of GP practices for focus groups was undertaken by Mrs Stephanie Tooth (Trial Manager). Of the 21 interviews with older adults I completed 18 interviews, and three were completed by Dr Benjamin Saunders. I transcribed, coded and analysed this data, and wrote this thesis myself.

Acknowledgements

There are many people to thank for their support in the writing of this thesis. Firstly, thank you to my research participants who gave their time to share their experiences with me. Thank you to Keele University for funding this PhD through an ACORN studentship, Keele Clinical Trials Unit for help with day-to-day management and recruitment, and the PPIE group who provided me with invaluable advice. Also thank you to Dr Bernadette Bartlam who provided supervision for the first year of this PhD.

There are many people to thank for their continued love and support. Firstly, to Matt, who kept me grounded, sane and supplied with tea! Also, to my family: my mum Julie, stepdad Paul, and grandparents Lily, Roy and Paddy for their optimism and confidence in me. To the friends I was surrounded by every day in the office – Alice, Isabela, Kay, Lurna, Marty, Miriam, Sarah, Christina and Rachael – so many laughs, discussions and memories made each day enjoyable and the daunting task of completing this PhD bearable. To my running and parkrun friends, thank you for your laughs, distraction, support and the development of a lifelong coping strategy – I couldn't run a 5k when I started this PhD and now half marathons are 'normal'! Thank you also to the people who believed in me in the most difficult times, Tammi, Claire, Evan, Connie and Faye: your unwavering belief, positivity, empathy and encouragement kept me going when I thought I couldn't. And to my beloved dog Dexter, who sat beside me and provided comfort and joy whilst finishing this in the middle of a pandemic.

Finally, thank you to my supervisors, Ben and Jonathan, and my post-graduate research director Sam. It's been a long journey, but I got there with your practical and emotional support. Sam – thank you for being realistic, keeping me grounded, and the reminders of self-care. Ben and Jonathan – my development as a researcher and as a

person is thanks to your continued support and encouragement; I have presented at international conferences, completed this PhD, got a job I love, and have so many future opportunities because of your confidence in me.

List of abbreviations

AUC:	Area under the curve
GP:	General Practitioner
KAPS:	Keele Aches and Pains Study
MSK:	Musculoskeletal
NHS:	National Health Service
NICE:	National Institute for Care and Excellence
NIHR:	National Institute for Health Research
OA:	Osteoarthritis
ONS:	Office for National Statistics
PPIE:	Patient and Public Involvement and Engagement
STarT:	Subgrouping for Targeted Treatments
TAPS:	Treatment for Aches and Pains Study (pilot study)
WHO:	World Health Organisation
UK:	United Kingdom

Chapter One: Background

Thesis introduction

This thesis investigates stratified primary care for older adults with musculoskeletal pain through a sequential mixed methods approach. To address this aim, firstly the quantitative strand of research undertook secondary data analysis from the STarT MSK programme (overview given in section 1.10). Secondly, the qualitative strand utilised focus groups with general practitioners (GPs) and physiotherapists, and interviews with older adults, resulting in three themes being identified. Both strands of research are then brought together in the discussion chapter.

1.1 Chapter introduction

This chapter presents the background context of the thesis. It discusses the prevalence and impact of musculoskeletal pain for older adults, the biopsychosocial approach to pain, the current pathway of assessment and management in the United Kingdom (UK) National Health Service (NHS), before introducing stratified care and the STarT MSK research programme. Through this chapter, the rationale for the aim of the thesis is developed and provided. The chapter concludes with an overview of the thesis chapters.

1.2 Definition of ‘older adult’

This thesis defines ‘older adults’ as people aged 65 or over. This is in line with the World Health Organisation’s (WHO) definition based upon the populations of developed countries and the National Health Service (NHS) England (NHS England, 2020; Office for National Statistics, 2019; World Health Organisation, 2002), and was adopted with the input from patients and the public (see 3.7 for further information). However, it is important to recognise that there is not one single definition of being an

‘older adult’. Definitions vary, with influence from many factors such as socio-economic status, biology, genetics, culture and life transitions (WHO 2020). As such, when reviewing evidence and previous research this thesis primarily included literature focused upon people aged 65 or over, but also included research that defined their populations as ‘older’. This is denoted where appropriate throughout the thesis.

1.3 Musculoskeletal pain in older adults

The phrase ‘musculoskeletal condition’ is an umbrella term for a wide range of health conditions that affect the muscles, joints, bones and spine (Versus Arthritis, 2019).

Musculoskeletal conditions can broadly be split into three categories:

- Inflammatory conditions (e.g. rheumatoid arthritis)
- Conditions of musculoskeletal pain (e.g. osteoarthritis, back pain)
- Osteoporosis and fragility fractures (e.g. broken bones from falling from a standing height)

Whilst inflammatory conditions can affect people of any age, musculoskeletal pain and osteoporosis are more common as age increases. In a report by the WHO in 2016, musculoskeletal conditions were acknowledged as a ‘threat to healthy ageing’ globally due to the significant impact that they have upon both individuals, health and care systems and economies (Briggs et al., 2016).

The prevalence of musculoskeletal conditions increases with age, with over 50% of adults aged 65 and over in the UK experiencing a musculoskeletal condition (Global Burden of Disease, 2017). Pain from musculoskeletal conditions is the most common type of chronic pain in older adults in Europe, although the exact prevalence varies between countries (Cimas et al., 2018; Thomas et al., 2004). The most prevalent pain site for older adults is lower limb (e.g. knee, ankle, foot); but older adults typically report pain in multiple sites, with up to 20% reporting four or more sites of pain

(Parsons et al., 2007; Patel, Guralnik, Dansie & Turk, 2013; Thomas et al., 2004).

Osteoarthritis is the most common type of musculoskeletal condition in older adults, affecting almost nine million people in the UK, with potentially serious consequences (Versus Arthritis, 2019). For example, it is estimated that 10% of people aged over 55 have disabling knee osteoarthritis, with a quarter of those severely disabled (Peat, McCarney & Croft, 2001). Pain is the main symptom of osteoarthritis, with eight out of ten people reporting pain most days, and six out of ten people reporting pain everyday (Arthritis Research UK, 2017).

1.4 Impact of musculoskeletal pain upon older adults

Musculoskeletal pain can have a significant impact upon quality of life for older adults across a range of factors. Almost a third of all years lived with disability are due to musculoskeletal conditions (Murray et al., 2013), with low back pain being the highest contributor to disability lived years globally (Woolf, 2015). Older adults with knee or hip osteoarthritis have demonstrated significantly lower health-related quality of life, especially in relation to physical functioning, physical role and pain domains than healthy controls (Alkan, Fidan, Tosun & Ardiçoglu, 2014; Salaffi, Carotti, Stancati & Grassi, 2005). The impact of musculoskeletal pain upon the dimensions of older adults' quality of life will be discussed below.

1.4.1 Physical impact

The physical impact of musculoskeletal pain can be severe for older adults, as it is associated with fear of movement, decreased mobility and loss of independence (Edeer & Tuna, 2012). Older adults living in the community, especially those with chronic musculoskeletal pain in multiple sites, are at least three times greater risk of developing mobility difficulties and subsequent disability than those without pain (Eggermont et al., 2014). The presence of musculoskeletal pain doubles an older person's risk for impaired balance and falls compared to those without pain (Leveille et

al., 2009). Falls are an important consequence of musculoskeletal pain for older adults as there is a high risk of mortality in this population (Yagci, Cavlak, Aslan & Akdag, 2007). Furthermore, older adults with increased risk of falls and mobility limitations facilitated by chronic musculoskeletal pain have a significant reduction in health-related quality of life compared to older adults without chronic musculoskeletal pain (Stubbs, Schofield & Patchay, 2014), demonstrating the significance of musculoskeletal pain, and the importance of early stage management to prevent the development of detrimental consequences. This impact upon physical ability can result in a decrease in older adults' functioning and ability to complete daily activities such as dressing, washing, getting into a car and domestic chores (Covinsky, Lindquist, Dunlop & Yelin, 2009; Jinks, Ong & Richardson, 2007). Subsequently, there is an impact upon an individual's ability to live independently, with a significant number of older adults requiring informal care and help with daily living from relatives (Bernfort, Gerdle, Rahmquist, Husberg & Levin, 2015), further reducing quality of life (Hellström, Persson & Hallberg, 2004).

Furthermore, chronic musculoskeletal pain is also associated with frailty in older adults, although this relationship is complex. Frailty is a multidimensional concept defined as a person having deficits in health, stability, vulnerability and cognitive abilities, and is more likely to occur with increasing age (Markle-Reid & Browne, 2003; Rockwood et al., 2004). Adverse health outcomes such as falls and hospitalisation, institutionalisation and ultimately death are all associated with frailty (Ng et al., 2014; Rockwood et al., 2004). There is evidence that chronic musculoskeletal pain increases the risk of older adults developing frailty (Veronese et al., 2017; Wade et al., 2017). Data from the English Longitudinal Study of Ageing shows that mild, moderate and severe reports of pain are all associated with higher levels of frailty eight years later in adults aged 50 and over, independent of gender or socio-economic status (Wade et al., 2017). There may be multiple mechanisms for this relationship; including older

adults with musculoskeletal pain often experiencing lack of balance and falls; limited mobility in patients with musculoskeletal pain; higher number of comorbidities; and increased rates of stress and depression (Veronese et al., 2017; Wade et al., 2017).

1.4.2 Psychological impact

Musculoskeletal pain can have a significant impact upon older adults' psychological wellbeing in multiple ways. In addition to affecting emotional wellbeing and mental health, there are also specific pain-related psychological factors that are important to consider.

1.4.2.1 Emotional wellbeing and mental health

Anxiety and depression are common comorbidities to chronic pain in older adults, with one in five people with osteoarthritis also reporting symptoms of depression or anxiety (Stubbs, Aluko, Myint & Smith, 2016). Having musculoskeletal pain is associated with an onset of depression; one longitudinal study has shown that current osteoarthritis pain strongly predicted future fatigue and disability, which in turn predicted future depressed mood (Hawker et al., 2011). Furthermore, perceived pain is a strong predictor for the severity of depression experienced by older adults with osteoarthritis; such that the higher the levels of perceived pain are, the greater the severity of depression (Rosemann et al., 2007). Having anxiety or depression can also affect outcomes for older adults with musculoskeletal pain. Poorer outcomes, such as higher reports of pain intensity, social isolation, and restricted activity; and lower levels of physical function are associated with having both musculoskeletal pain and depression (Hung et al., 2017; Lin et al., 2003). A systematic review identified that older adults with osteoarthritis and anxiety or depression experienced more pain, had more frequent hospital visits and took more medication (Sharma, Kudesia, Shi & Gandhi, 2016).

Furthermore, musculoskeletal pain also has significant impact upon sleep, with at least 25% of older adults with pain reporting difficulty maintaining sleep (Baker, McBeth, Chew-Graham & Wilkie, 2017). Both pain and sleep difficulties are subsequently related to decreased participation in social activities at 12 months, potentially leading to decline in physical function and a risk of isolation (Baker et al., 2017).

1.4.2.2 Pain-specific psychological factors

There are several pain specific psychological factors that are important to be taken into account for older adults with musculoskeletal pain. Pain catastrophising is an individual's exaggerated negative perception or expectation of the pain experience (Sullivan et al., 2001). The literature on pain catastrophising for older adults is mixed. A number of studies have reported that younger adults report higher levels of pain catastrophising than older adults (Turner, Mancl & Aaron, 2004; Kneeland, Griffin, Taghian, Weiss & McHugh, 2019). However, in a comparison study between younger adults (aged between 20 and 40) and older adults (aged between 50 and 70), whilst both groups reported pain catastrophising there were differing factors that affected this; in younger adults catastrophising was associated with greater emotional responses to pain, whilst in older adults it was associated with higher pain intensity (Ruscheweyh et al., 2011). Therefore, there is a possibility that older adults experience fewer negative emotional reactions to pain. When viewed from a lifecourse perspective it could be posited that the reason for this is that older adults have more life experience and adaptive coping strategies in relation to negative emotions than younger adults.

A second factor to consider is fear of movement due to pain, termed 'fear avoidance'. Pain-related fear avoidance occurs when an individual catastrophizes in response to pain, leading to fearing that movement will result in re-injury and further pain. This then leads to an individual avoiding movement altogether, and leads to long-term disability, depression and disuse of the musculoskeletal system (Vlaeyen & Linton, 2000).

Identifying the relationship between pain-related fear and other psychological factors in older adults is complex. When people with chronic pain were analysed by age, older adults were found to have lower levels of pain-related fear than middle-aged adults, but that pain-related fear was a mediator between catastrophising and disability in older adults (Cook, Brawer & Vowles, 2006). Pain-related fear is also associated with higher levels of disability and lower levels of physical function in older adults (Keefe et al., 2013; Sions & Hicks, 2011).

An important factor to take into account for both catastrophising and pain-related fear for older adults is the fear of falling. The number of reported falls rises with age, and the consequences of falls can be severe (Veronese et al., 2017; Wade et al., 2017). Indeed, some studies have found that older adults report higher levels of catastrophising due to the potential severity of consequences of pain in older age, especially the higher likelihood of falls and social isolation, which is subsequently linked to higher levels of pain severity and depression (Keefe, Porter, Somers, Shelby & Wren, 2013; Lopez-Lopez, Montorio, Izal & Velasco, 2008; Wood, Nicholas, Blyth, Asghari & Gibson, 2015). Therefore, these psychological concepts may be misidentified, compounding effective treatment options (Keefe et al., 2013).

1.4.3 Social impact

Social isolation and loneliness are key factors to consider for older adults. Social isolation is an objective concept; defined by low or non-existent levels of social participation whilst loneliness is subjective; the perceived difference between desired and actual social relations (Neves, Sanders & Kokanovic, 2019). Therefore, a person may objectively have a low level of social participation but not feel lonely, and vice versa. Social isolation and loneliness are prevalent in older adults, often exacerbated by changing of social circumstances such as retirement, bereavement and living alone (Karp, Shega, Morone & Weiner, 2008; Pinquart & Sorensen, 2001). Social isolation

and loneliness are also associated with chronic pain in older adults, such that older adults reporting chronic pain are more likely to be socially isolated and lonely and vice-versa; in one cohort study, loneliness was one factor that predicted chronic low back pain in older adults seven years later (Jacobs, Hammerman-Rozenberg, Cohen & Stressman, 2006; Smith, 2017). Pain is also a risk factor for the onset of loneliness in older adults (Emerson, Boggero & Ostir, 2017). Older adults with chronic pain were found to be 58% more likely to experience loneliness four years later than those without pain. As older adults with chronic pain spend less time in social situations, they subsequently report more restrictions upon social and leisure activities, leading to increased levels of social isolation (Gignac et al., 2008; Machado, Gignac & Badley, 2008). Therefore, interventions targeting chronic pain in older adults, particularly self-management interventions, must address an older adult's social situation (Keefe, Porter, Somers, Shelby & Wren, 2013). Social support is a protective factor for older adults experiencing musculoskeletal pain; greater levels of social support are associated with lower levels of depressive symptoms in older adults with chronic pain (Hung et al., 2017; Lee, Kahana & Kahana, 2015) and engaging in adaptive coping strategies (Holtzman, Newth & Delongis, 2004), even if the impact upon pain itself is not significant (Hung et al., 2017). However, it is important that this social support encourages older adults to remain as independent as possible, or this could become harmful as a dependency on support may develop (Matos, Bernardes & Goubert, 2017).

1.5 Biopsychosocial approach to pain

The sections above have illustrated the impact that musculoskeletal pain can have upon an older adult's life, and therefore taking a biopsychosocial approach is imperative for effective assessment and management. However, the biopsychosocial approach is relatively recent; the biomedical approach was at the forefront of pain research until the 1960s (Gatchel et al., 2007). The biomedical approach assumes a

causal relationship between a noxious stimulus and pain, conceptualising the brain and the body as separate independent entities; however there are a number of pain phenomena that do not fit into this model, such as muscular, deep tissue and phantom limb pain (Melzack and Wall, 1965; Moayedi & Davis, 2013). Having identified these issues, the gate control theory was developed, and has become one of the most influential and revolutionary theories of pain. Proposed by Melzack and Wall in 1965, this was the first theory to acknowledge the effect that psychological factors can have upon an individual's pain perception. The theory posits that a painful stimulus activates afferent fibres travelling up to the brain via transmission cells in the dorsal horn in the spinal cord. These transmission cells are 'gated' via a mechanism operated by the cells' activity levels. Increasing activity in these cells 'opens' the gate, allowing more signals to be sent to the brain, resulting in an increase in perceived pain. Conversely, decreasing activity 'closes' the gate, thereby reducing the pain sensation (Melzack and Wall, 1965). Importantly, the gate control theory proposes that descending fibres from the brain can modulate the activity in the transmission cells, and therefore psychological factors such as stress, anxiety, depression, attention, anger and distress can influence the opening and closing of the gates, and thus the experience of pain (Melzack & Casey, 1968; Moayedi & Davis, 2013).

Despite the gate control theory being published in 1965, assessment and management of musculoskeletal pain continued to focus on biological underpinnings until a seminal paper by Waddell in 1987 proposed a new clinical model for the treatment of low back pain, moving from the biomedical model to the biopsychosocial model. In response to the increase in disability reported by patients with low back pain, Waddell emphasized that low back pain itself and disability must be distinguished and separated; recognising that when a patient consults, assessment and treatment is guided more by patient distress and behaviour than the actual physical disorder. This is key: clinical assessment of pain and disability is dependent upon the patient's self-report as there

may be no discernible physiological cause, and therefore understanding the influence of psychological and social factors such as attitudes, beliefs, expectations, distress and illness behaviour is critical (Gagliese, 2009). This enables a holistic view of the person with pain to be undertaken, also providing a conceptual framework through which patients can explore and describe their illness experiences regardless of medical diagnosis (Engel, 1997).

Waddell's article also highlighted that chronic pain is a thoroughly different syndrome to acute pain. Although the gate control theory provided the physiological underpinnings of acute and chronic pain, the associated complex psychosocial factors are arguably more important to address. Whilst acute pain has a relatively straightforward relationship to nociception and tissue damage, and subsequently responds well to pharmacologic and physical intervention, chronic pain becomes increasingly dissociated from the physical basis and resistant to traditional management. Instead, chronic pain becomes increasingly associated with emotional distress, depression, inactivity and adoption of sick role behaviour (i.e. increasing dependency upon unhelpful coping strategies and neglecting normal duties).

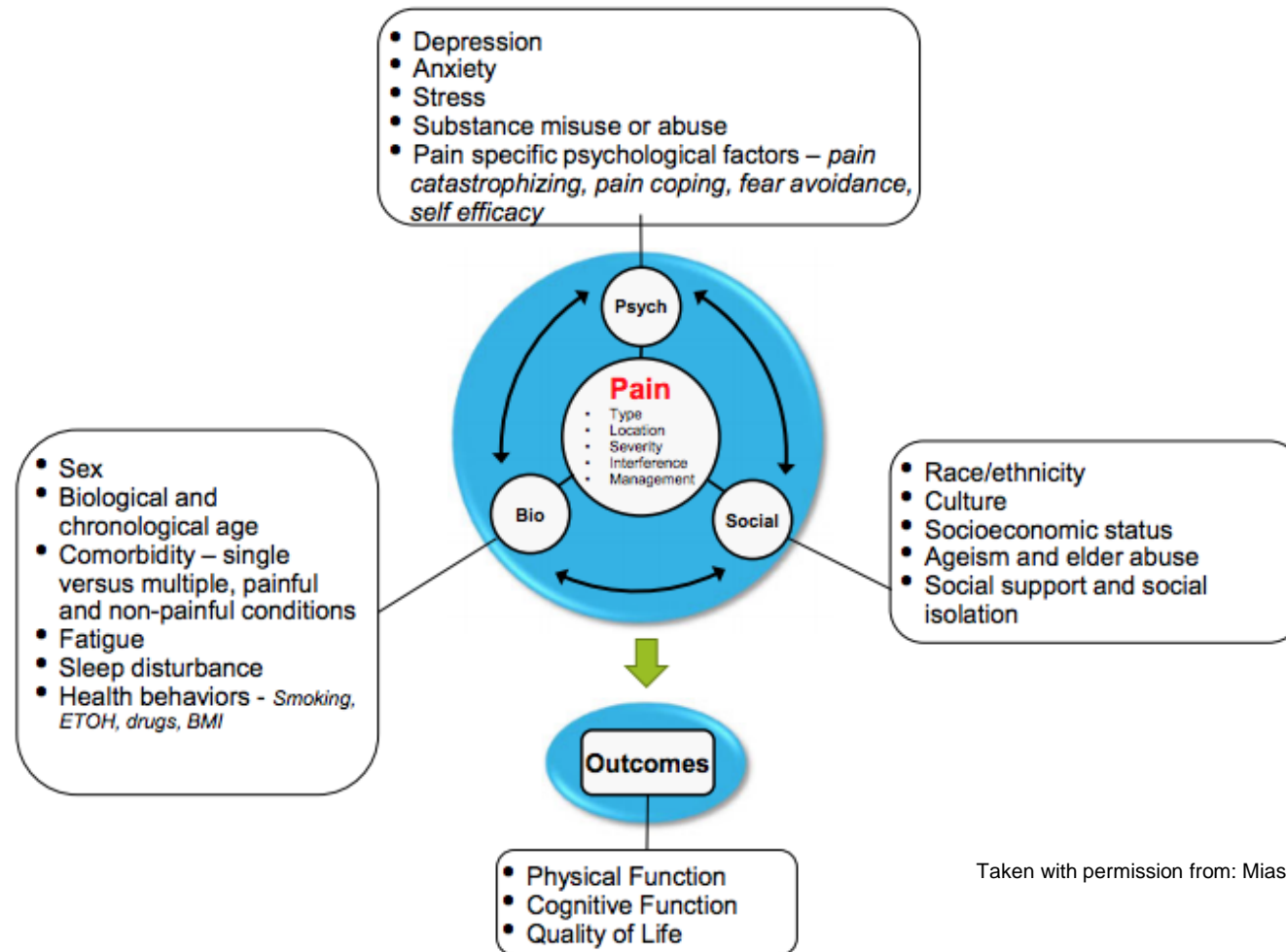
Taking a biopsychosocial approach is especially important when considering pain in older adults. The research attempting to establish more 'objective' measures of age-related changes in pain perception is mixed. A systematic review and meta-analysis found that older adults have a significantly higher pain threshold than younger adults, such that older adults have reduced sensitivity to pain in the lower pain range (Lautenbacher et al., 2017). However, the studies in this review rarely included participants older than 75 which neglects the experiences of the oldest-old age group, and only included studies of experimental pain (pressure, heat, electrical stimuli), which may not be representative of real-life chronic pain experiences, especially musculoskeletal pain. Indeed, research exploring older adults' reporting of pain related

to a physical health condition has often found that there is a wide variability in reporting, even when pathologies are comparable (Gagliese, 2009). Therefore, there must be factors other than the biological underpinning this variability, such as the psychological and social factors discussed above. Furthermore, the majority of musculoskeletal pain experienced by older adults is chronic. Therefore, as discussed by Waddell, acknowledging and addressing the psychosocial components is integral as conventional medical treatments have limited efficacy. Based upon a focused review of the older adult literature, Miaskowski et al., (2019) have produced a biopsychosocial framework for understanding chronic pain in older adults. Summarising the issues and complexities discussed, this framework highlights the most important concepts to consider for this population, and is shown in Figure 1.1.

1.6 Wider impact of musculoskeletal pain in older adults

Musculoskeletal pain in older adults is particularly important to address as populations are ageing. Population ageing refers to the increasing number and proportion of older adults in a country's population (United Nations, 2015). This increase is global, with estimates predicting an increase of adults aged over 60 years from 901 million to 1.4 billion between 2015 and 2030, and in more developed countries such as the UK, United States of America (USA) and Australia, an average of 23.9% of the population are currently aged over 60 (United Nations, 2015). By 2039, 24.3% of the UK population is projected to be aged over 65 (Office for National Statistics, 2019), and it has been estimated that at least one in three babies born in 2000 will live until 100 years old (Department of Work and Pensions, 2011), emphasizing the importance of addressing musculoskeletal pain as a current and future priority.

Figure 1.1: Biopsychosocial framework for understanding chronic pain in older adults



Taken with permission from: Miaskowski et al., 2019

Additionally, the increase in life expectancy has led to redefining old age. Almost a quarter of adults aged 65-69 define their stage of life as 'middle adulthood' rather than 'later life or old age' (Humphrey, Lee & Green, 2011). This has led to a recognition of differences between the 'young old' and the 'oldest old', with the 'oldest old' group commonly seen as consisting of adults aged over 85 (Smith, Borchelt, Maier & Jopp, 2002). This reinforces the difficulty in defining 'older adults' (as discussed in section 1.2) as there is growing evidence to support the notion of ageing and becoming an 'older adult' as a gradual change, rather than a sudden transition. Therefore, the importance of acknowledging heterogeneity among this population is imperative.

1.6.1 Older adult policies and guidelines

A number of policies have been published focusing on the potential impact of population ageing and changing the way that older age is conceptualised. The World Health Organisation's 'Active Ageing' policy promotes the value of older adults in society, advocating for older adults to be able to continue to contribute to economy and community, displacing the stereotype of older adults as a burden and drain on welfare (WHO, 2002). In the UK, the 'Ready for Ageing' report addressed the economic impacts of working in later life, pensions and savings, care and housing arrangements; attitudes towards ageing, policy implications of ageing and health and social care (House of Lords, 2013). This was followed by a number of recommendations by the Ready for Ageing Alliance (2014), including ending age discrimination, increasing investment in social care, and updating the hospital model for current and future needs. However, a follow-up report released in 2016 reflected that little progress had been made in these areas (Ready for Ageing Alliance, 2016).

For these policies to be effective, addressing health and healthcare is essential. Older adults are often stigmatised as having poor health, and subsequently being a burden upon the healthcare systems and the economy (Lloyd-Sherlock et al., 2012). Additionally, increased life expectancy is often perceived as an extension to morbidity, rather than an extension to

healthy active lives (Lloyd-Sherlock, 2000), especially as multimorbidity rises significantly with age, often including chronic conditions (Violan et al., 2014). However, there are very few policies focusing on care for older adults with pain. In 2008, Help the Aged (now Age UK) encouraged the government to recognise chronic pain in older adults as an urgent public health issue and produced the following recommendations for the government and policy-makers:

- Raise primary care clinicians' awareness of pain and its impact in older adults
- Have services that are accessible through self-referral or referral by carers, friends or family
- Increase the number of pain specialists to meet demand
- Ensure that pain services meet older adults' needs, and that pain management programmes are suitable for teaching older adults how to live and cope with pain
- Develop an agreed care pathway between primary and secondary care services for accessible and tailored care

However, many of these recommendations have not been yet been addressed. Recent UK national guidelines for assessment and management of pain in older adults have identified that: clinicians continue to have a bio-medically orientated approach and a general negative orientation to patients presenting with chronic pain; pain in older people is still under-reported and poorly assessed and managed; and although educational programmes show positive preliminary results, more work is needed to integrate these into the healthcare system (Schofield et al., 2018; Schofield et al., 2019). This lack of national policy results in fragmented care across the country, with available treatments often dependent on locality.

1.6.2 Socio-economic impact

Musculoskeletal pain has a significant impact upon the economy and society through direct (e.g. hospital costs) and indirect costs (e.g. lost productivity, informal care). In 2013/2014, £4.7 billion was spent on musculoskeletal conditions in the NHS, the third largest area of

NHS spending (NHS England, 2014). Osteoarthritis cost the UK economy an estimated £17 billion in direct and indirect costs in 2010, with hospital costs of hip fractures totalling 1.9 billion alone (Arthritis Research UK, 2017). Indirect costs are often higher than direct costs, as evidenced by back pain costing £1.6 billion in direct costs and £10 billion in indirect costs in 2000 (Maniadakis & Gray, 2000). As the retirement age in the UK increases and older adults are encouraged to continue working through policies such as Active Ageing, absences from work due to musculoskeletal pain will increase. Treating musculoskeletal conditions is also expensive, with £233 million spent on prescriptions in 2015 (Arthritis Research UK, 2017). For older adults aged 85 and over, who are the highest consumers of health care and often the most complex cases, healthcare costs are three times as much as those under 75 (UK Parliament, 2015). It is therefore essential that there is an effective and efficacious pathway for treating musculoskeletal pain in older adults that acknowledges the heterogeneity of this population.

1.7 Musculoskeletal pain in primary care

In the UK, musculoskeletal pain is mostly assessed and treated in primary care. This creates a huge burden for services; with one in seven consultations being for musculoskeletal pain and 4.63 million appointments (the equivalent of 793 full-time GPs) dedicated to treatment and support of chronic pain (Belsey, 2002; Jordan et al., 2010). GP consultation rates increase with age, with those aged 85-89 consulting double the amount than those aged 50-54 (Hippisley-Cox & Vinogradova, 2009). This rate has almost doubled since 1995, when those aged 85-89 consulted an average of 6.8 times a year, compared to 12.5 in 2008. One in five people consulting their General Practitioner (GP) are consulting for a musculoskeletal condition, and within the older adult population this rises to one in three people (Jordan et al., 2010; Versus Arthritis, 2019).

1.7.1 Assessment of musculoskeletal pain in older adults

Assessment of musculoskeletal pain is a key step in its effective management in primary care, and yet this assessment is known to be particularly complex for older adults (Catananti & Gambassi, 2010). Both ageing and pain are multidimensional experiences, meaning that factors beyond the physical causes of the pain need to be carefully explored (Gagliese, 2009), and there are many unique challenges to pain assessment in older adults.

Firstly, assessing the intensity of pain for older adults can be difficult. Physiological changes during the ageing process can lead to older adults having different pain perceptions to younger adults, although this is inconclusive. However, the experience of pain and pain intensity is considered to be similar across the lifespan, regardless of any potential muted response to pain (Gagliese, 2009). Furthermore, it may not always be possible to rely upon diagnostic imaging when assessing musculoskeletal pain. Over half of people with osteoarthritis who report pain do not show any radiographic symptoms (Dansie & Turk, 2013). Therefore, given these challenges, assessment often relies upon older adults' self-reports of musculoskeletal pain. However, using self-report also has challenges for older adults. For example, the perception that musculoskeletal pain is a normal part of ageing can lead to under-reporting in older adults (Jinks, Ong & Richardson, 2007), and thus older adults may not perceive it to be severe enough to require a consultation. This is also reflected in GPs dismissing musculoskeletal pain as a normal part of ageing and 'wear and tear', which can result in patients being less likely to report their pain in other healthcare consultations (Jinks, Ong & Richardson, 2007). Additionally, self-reports of musculoskeletal pain often rely on information gathered over a period of time such as pain intensity, pain site, pain duration, patterns of pain over the last month. Forgetfulness due to ageing is common, and thus reports may not be accurate; especially if an older adult is unaware of these questions prior to the consultation and unable to prepare (Hadjistavropoulos et al., 2007). The language used to communicate about pain presents further barriers. Often older adults may use words such as 'ache', 'stiff', and 'discomfort' to describe their pain, which can be

interpreted as being of a lower severity (Hadjistavropoulos et al., 2007), leading to clinicians potentially underestimating its impact, and subsequently selecting inappropriate management options.

The time constraint of a GP consultation creates additional obstacles; in the UK, the majority of consultations last only 10 minutes. On average, older adults present with a greater number of comorbidities and polypharmacy than younger adults, which can complicate GP consultations. These other comorbidities may be considered more important by both the clinician and the older adult, meaning that the pain is not addressed in the detail needed (Molton & Terrill, 2014). In addition to discussing pain and comorbidity, guidance advocates for a comprehensive and holistic assessment of pain in older adults, addressing psychosocial factors such as perceived control of pain, self-efficacy, anxiety and depression. Thus, health care professionals should use an individualised approach to assessment. However, completing a comprehensive assessment in the limited timeslot is difficult for GPs. Therefore, to ensure that all dimensions of pain are addressed, more efficient methods of delivering comprehensive pain assessments are needed.

1.7.2 Management of musculoskeletal pain in older adults

Management of musculoskeletal pain is often focused on decreasing pain and improving function, rather than providing a cure due to the chronic nature of musculoskeletal conditions (Edeer & Tuna, 2012). Joint replacements are available as a 'last resort', however are not recommended for the majority of older adults with musculoskeletal pain (National Institute for Care and Excellence (NICE), 2017).

The complexities discussed above in the assessment of pain for older adults also affect management. The increased prevalence of comorbidities and polypharmacy in older adults creates a challenge using pharmacological treatment strategies (Reid, Eccleston & Pillemer, 2015). Specifically, certain medications may not be able to be prescribed due to interactions

with other medications. Additionally, adherence to medication in older adults is relatively low, with as many as 50% of older adults non-compliant (Social Care Institute for Excellence, 2005). There are a number of barriers to medication adherence including patients' lack of knowledge about their health condition, lower health literacy, adverse effects from medication, polypharmacy and the patient-clinician relationship in the consultation (Gellad, Grenard & Marcum, 2011). In qualitative studies, older adults describe simply not wanting to take medication, fears of addiction and the ability to tolerate pain without needing painkillers (Sale, Gignac & Hawker, 2006). Therefore, non-pharmacological treatments to manage pain for older adults are essential.

However, older adults' attitudes and perceptions of musculoskeletal pain can lead to difficulties in implementing non-pharmacological strategies. For example, exercise and manual therapy are recommended interventions for musculoskeletal pain, irrespective of age, comorbidity, pain severity or disability (NICE, 2017b). These interventions should include muscle strengthening and general aerobic fitness for older adults particularly, as ageing is related to loss of muscle strength and decreased power (Cruz-Jentoft et al., 2010). Therefore, exercise can help to improve the consequences of this, such as lack of balance, falls and frailty (Binder et al., 2002; Sherrington et al., 2011). Additionally, exercise can improve symptoms of musculoskeletal conditions in older adults; with significant improvements in pain, stiffness and physical functioning for participants who completed tai chi exercise interventions compared to participants receiving usual care (Hall et al., 2017; Song, Lee, Lam & Bae, 2003). However, it is difficult to engage older adults in these interventions. Uncertainty about the efficacy of exercise for musculoskeletal pain and fears that it can cause further damage are prevalent despite evidence that these interventions are safe (Quicke, Foster, Thomas & Holden, 2015). These views are often rooted in individuals' perceptions about the cause of their condition (e.g. injury) and the expected outcome (e.g. increase in pain) (Dobson et al., 2016; Holden et al., 2012) and can have a negative impact, as avoidance and restriction of physical activity is further associated with increased levels of

disability in older adults (Deshpande et al., 2008). There are a number of methods that can help to improve adherence to exercise for older adults with musculoskeletal pain, including motivational techniques, booster sessions with a physiotherapist and behavioural graded exercise, however the benefits of these decline over time, are costly and require capacity within healthcare systems (Nicolson et al., 2017).

In addition to exercise and physiotherapy, self-management programmes are often recommended to manage chronic pain. These programmes often run in group formats over a number of sessions and can include lifestyle recommendations, exercise, psychoeducation, relaxation and group discussion (British Pain Society, 2013). For older adults with chronic musculoskeletal pain self-management programmes can be effective, with marked reductions in both pain and disability scores (Du et al., 2011). A randomised controlled trial comparing a self-management programme to usual primary care for older adults with knee osteoarthritis resulted in better functioning scores for patients receiving the programme than those receiving usual care (Hurley et al., 2007). However, patient expectations of pain management services often revolve around pain relief and pharmacological treatments, rather than the holistic approach used in pain management programmes, and therefore it can be difficult to engage and retain patients (Allcock, Elkan & Williams, 2007; Cormier, Lavigne, Choiniere & Rainville, 2015).

It is essential that musculoskeletal pain is assessed and managed efficiently and effectively to minimise its significant negative impact upon older adults. To achieve this, it is important that a patient's treatment goals, expectations, comorbidities, cognitive and functional ability in addition to support resources are taken into account when managing chronic pain in later life (Makris, Abrams, Gurland & Reid, 2014). However, the complex assessments needed for older adults and the difficulty of prescribing medication can cause issues in the time constrained GP appointment. Moreover, non-pharmacological interventions such as pain management and exercise programmes are especially difficult to integrate into primary care

management due to the time commitments, intensity and skilled practitioners required, in addition to patient perceptions. Therefore, new ways of managing health care systems, especially for older adults with chronic musculoskeletal pain are required.

1.8 Stratified care

In primary care consultations, clinicians have traditionally used a stepped care management approach for the majority of patients with musculoskeletal pain. In the first instance, stepped care involves a pragmatic 'wait and see' approach, in case the patient's symptoms resolve naturally, supplemented with reassurance and recommendations for ways to self-manage. If symptoms persist, then treatments 'step up' in intensity, with available options including physiotherapy, and/or prescribed medication. For more severe and chronic patients, recommended options then include imaging, psychological therapy, or pain management programmes as appropriate. However, this stepped approach may result in considerable delays for patients at higher risk of persistent and disabling symptoms, potentially worsening their condition. Therefore, development and implementation of alternative management methods is imperative. Stratified care aims to match appropriate treatments to subgroups of patients. There are multiple methods through which treatments can be matched with patients with musculoskeletal pain: the prognostic risk of persistent disability, the underlying mechanisms of the pain, or the prediction of responsiveness to treatment (Foster, Hill, O'Sullivan & Hancock, 2013). Musculoskeletal pain in primary care is particularly suited to prognostic stratified care. The musculoskeletal pain population is diagnostically and clinically heterogeneous, often with no observable underlying mechanism, therefore, it is impractical to stratify treatments based on cause. Additionally, psychological and social factors are integral to musculoskeletal pain, and there is evidence that these are good predictors of outcomes (Storheim & Zwart, 2014). Prognostic tools, which calculate a patient's risk based on a number of individual characteristics are developed to allocate patients to subgroups. Prognosis and the development of prognostic tools for stratified care are discussed in detail in the next chapter.

1.8.1 Stratified care research

There have been a number of trials investigating the efficacy of prognostic stratified care for musculoskeletal pain in the last 10 years. One of the most influential trials is the STarT Back trial, which used stratified care for management of low back pain (Hill et al., 2011). This programme of work developed the STarT Back Tool, a nine-item prognostic tool with a psychosocial subscale that grouped participants into low, medium or high risk of having persistent low back pain in six months' time (Hill et al., 2008). Appropriate treatments were then matched to each subgroup. The STarT Back tool and matched treatments are shown in Figures 1.2 and 1.3.

Figure 1.2: The STarT Back Tool

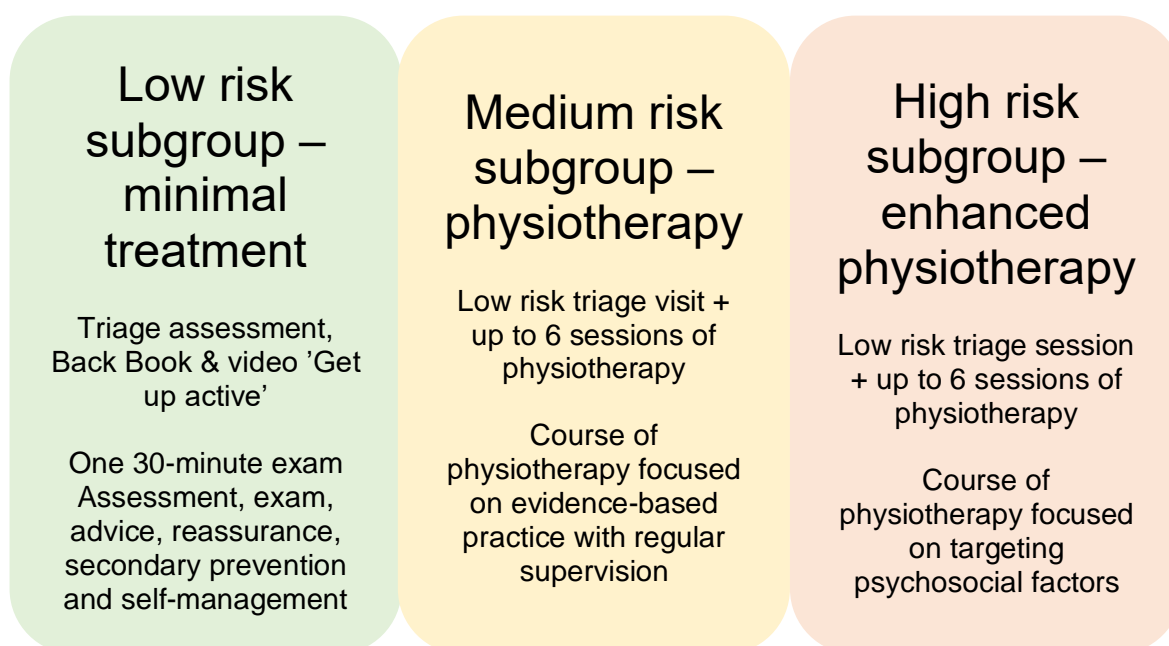
Thinking about the **last 2 weeks** tick your response to the following questions:

	Disagree 0	Agree 1
1 My back pain has spread down my leg(s) at some time in the last 2 weeks	<input type="checkbox"/>	<input type="checkbox"/>
2 I have had pain in the shoulder or neck at some time in the last 2 weeks	<input type="checkbox"/>	<input type="checkbox"/>
3 I have only walked short distances because of my back pain	<input type="checkbox"/>	<input type="checkbox"/>
4 In the last 2 weeks, I have dressed more slowly than usual because of back pain	<input type="checkbox"/>	<input type="checkbox"/>
5 It's not really safe for a person with a condition like mine to be physically active	<input type="checkbox"/>	<input type="checkbox"/>
6 Worrying thoughts have been going through my mind a lot of the time	<input type="checkbox"/>	<input type="checkbox"/>
7 I feel that my back pain is terrible and it's never going to get any better	<input type="checkbox"/>	<input type="checkbox"/>
8 In general I have not enjoyed all the things I used to enjoy	<input type="checkbox"/>	<input type="checkbox"/>

9. Overall, how **bothersome** has your back pain been in the **last 2 weeks**?

Not at all	Slightly	Moderately	Very much	Extremely
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
0	0	0	1	1

Figure 1.3: STarT Back matched interventions/treatments



The STarT Back trial found that stratified care for back pain resulted in significant improvements in disability, physical and emotional functioning, pain intensity, quality of life, days off work, global improvement and treatment satisfaction along with cost savings compared to usual care (Hill et al., 2011). By matching treatments to the subgroups, the trial improved clinical decision making for healthcare professionals by discouraging the use of treatments that are unhelpful for the majority of low back pain patients (particularly imaging and opioids), and promoting self-management, exercise and physiotherapy. Importantly, despite receiving less intense treatments than usual care, the outcomes for the low risk stratified care group were no worse than the low risk control group; showing that the majority of referrals for these patients may be unnecessary.

To ensure protocol adherence and high internal validity, the STarT Back trial was hosted within a community-based specialist physiotherapy clinic; patients were referred to this clinic after presenting to their GP with non-specific low back pain. Therefore, to examine if stratified care was effective within the usual healthcare system (in which assessment and

treatment decision-making is made by GPs), an implementation study (IMPACT Back) was undertaken in routine GP clinical practice. Continuing the success of STarT Back, the IMPACT Back study showed improvements in participants' physical function, fear avoidance beliefs, satisfaction and time off work (Foster et al., 2014). For the high-risk subgroup, there were also significant improvements in pain, disability and depression. IMPACT Back also facilitated a shift in clinician decision making; referrals to physiotherapy were risk appropriate and there were fewer sickness certifications and prescriptions of non-steroidal anti-inflammatory drugs. When implemented into primary care, stratified care continued to have no adverse effects upon pain and disability in the low-risk subgroup, despite participants receiving lower intensity interventions.

On the basis of this research, stratified care is now recommended in both national and international guidelines for the management of low back pain. In the UK, the NICE guidelines recommend using stratified care at the first point of contact for every new episode of low back pain with or without sciatica (NICE, 2018). Internationally, stratified care is recommended in a number of countries, including Belgium and Australia (Traeger, Buchbinder, Elshaug, Croft & Maher, 2019).

Following STarT Back, a number of international studies of stratified care for low back pain have been undertaken, including in the USA, Denmark and Ireland, however results have been mixed. The MATCH trial, a large cluster randomised trial in primary care in the USA found that although the STarT Back tool was used in approximately 50% of visits, there was no change in clinicians' treatment decision making and stratified care did not improve patient outcomes (Cherkin et al., 2018). Similarly, a Danish randomised controlled trial found that both usual and stratified care produced significant improvements in disability at follow up, with no additional benefit to using stratified care (Morsø, Schiøttz-Christensen, Søndergaard & Christiansen, 2019). However, an Irish pragmatic non-randomised study embedded into primary care found that stratified care with group interventions was effective for patients, and

superior to usual care for high-risk patients (Murphy, Blake, Power & Fullen, 2016). Furthermore, a preliminary study in the USA found that physiotherapy patients managed using stratified care had better outcomes for pain intensity and disability than the standard care group (Beneciuk & George, 2015). However, these studies had short follow up periods (four and 12 weeks respectively), compared to the longer-term follow ups of the randomised controlled trials (six and 12 months). Other differences between countries such as health insurance, healthcare system organisation and baseline participant severity may affect how well stratified care works internationally. Therefore, whilst stratified care has shown to be effective in British populations, its efficacy internationally is as yet unsubstantiated.

1.8.2 Stratified care for musculoskeletal pain and older adults

As discussed above, assessment and management of musculoskeletal pain for older adults is complex. Consideration of these complexities suggests that stratified care has the potential to be useful for older adults where there are issues in current care. For example:

- Musculoskeletal pain can have a severe impact upon older adults' health and wellbeing, with significant risks of frailty and isolation, and so receiving an appropriate level of care in a timely manner is crucial;
- Utilisation of a prognostic tool developed from a biopsychosocial approach to pain may help clinicians to undertake a more comprehensive assessment, as recommended by Hadjistavropoulos et al (2007);
- Focusing the clinician's attention in the consultation on the impact of musculoskeletal pain, rather than being overlooked in favour of other comorbidities;
- Promoting non-pharmacological management options may improve the range of treatments offered to older adults, and therefore help to reduce polypharmacy.

However, currently there is no research exploring the use of stratified care in the management of musculoskeletal pain in older adults, and therefore it is unknown whether

stratified care is appropriate or useful for this population, given the complexities discussed in this chapter. As such, it is apparent that exploration of the usefulness of stratified care for older adults in terms of the prognostic tool, the primary care consultation and the matched treatments is essential.

1.9 Thesis aim

Devised from the above synthesis of the current evidence, the aim of this thesis was to investigate the use of stratified care for older adults with musculoskeletal pain, within the context of the STarT MSK research programme.

1.10 STarT MSK and nesting of the PhD

Following the success of STarT Back and IMPaCT Back, the STarT MSK programme was developed by the same research team and subsequently funded through an NIHR programme grant (RP-PG-1211-20010). Key to the STarT MSK programme is the finding that similar prognostic factors effect outcome across musculoskeletal pain sites; especially for back, neck, knee, shoulder, hip and multisite (Artus, Campbell, Mallen, Dunn & van der Windt, 2017). Therefore, this six year programme of research aimed to test the clinical and cost-effectiveness of a risk stratification primary care approach for patients with the five most common musculoskeletal pain presentations in primary care: back, neck, knee, shoulder and multisite (Campbell et al., 2016; Jordan et al., 2010). This included the development of a prognostic tool similar to STarT Back, integration of stratified care into primary care, and matched treatment pathways. This took the form of four workpackages, which are detailed below.

1.10.1 Workpackage 1 – The Keele Aches and Pains Study (KAPS)

The aim of workpackage 1 was to refine and validate the STarT MSK tool; the prognostic tool used to stratify patients with musculoskeletal pain into low, medium and high risk subgroups based on their risk of poor outcome, i.e. high pain intensity (defined as a score ≥ 5

on a 0-10 numerical rating scale) at six months. Crucially, the tool needed to have the same questions and cut-off points for all five pain sites, enabling ease of use in primary care settings. A prospective cohort study with 14 GP practices across Central England provided the data for this workpackage; patients who attended their GP for a musculoskeletal problem were identified via Read code (symptom/diagnostic codes used by GPs), and subsequently mailed questionnaires regarding their pain at baseline (around two weeks after their consultation), two- and six months post consultation (Campbell et al., 2016). Altogether, 1897 patients responded to the baseline questionnaire, with 1428 at two months and 1453 at six months (Dunn et al., 2020, awaiting publication). All data collection was via self-reported paper questionnaires. From this, a nine-item prognostic tool (the draft STarT MSK Tool) was validated, which stratified patients into low, medium or high risk subgroups based on their risk of having high pain intensity (defined as a score ≥ 5 on a 0-10 numerical rating scale) at six months (Dunn et al., 2020, awaiting publication).

1.10.2 Workpackage 2 – Intervention development

Workpackage 2 developed the matched clinical treatment options for the low, medium and high risk patients for each of the five pain sites and the support packages to aid GPs in delivering stratified care in the trial. As the management options were designed to guide clinical primary care decision making, it was necessary that current clinical practice, guidelines and pathways for each pain site were reflected in these options. A number of methods were used to inform this development, including a review of current evidence (Babatunde et al., 2017) and expert consensus workshops with clinicians (Protheroe et al., 2019). Focus groups with both patients and professionals (Saunders et al., 2016) informed the format and acceptability of the intervention and the types of support that clinicians would need to use stratified care. Through this process a list of matched management options was produced for use in Workpackage 3.

1.10.3 Workpackage 3 – Treatment for Aches and Pains Study (TAPS) feasibility and pilot study (STarT MSK Pilot Trial)

Workpackage 3 was a pilot and feasibility study of the proposed cluster randomised trial (Workpackage 4). Eight GP practices in Central England were randomised into four intervention practices (stratified care) and four control practices (usual care). The STarT MSK tool was embedded in the electronic GP medical record system EMIS, and was triggered upon GP entering relevant Read codes (routinely used diagnostic and symptom codes) of musculoskeletal pain. GPs completed the tool with patients in the consultation and were subsequently given the patients' risk stratification and recommended matched management options. Patients were sent a baseline questionnaire around two weeks after their consultation; received monthly texts/postcards asking about pain intensity, distress and self-efficacy for six months, and completed a final questionnaire at the six-month timepoint. Running between October 2016 and May 2017, the pilot trial recruited 524 patients and met the 'partial success' pre-defined study criteria (Hill et al., 2020a). Qualitative research was also undertaken to explore GPs' and patients' experience of using stratified care (Saunders et al., 2020). Changes made, based on these findings, included:

- Modifying the STarT MSK tool (self-report version) - removing redundant items and including more valid items, resulting in a new 0 – 12 point 10-item tool (See Figure 1.4);
- Developing a clinician completed version of the STarT MSK Tool for use at the point-of-consultation (see Figure 1.5);
- Rewording some of the items included in the STarT MSK tool to facilitate ease in use within consultations;
- Simplifying the matched clinical management options and implementing a direct pathway to physiotherapy for intervention GP practices (matched treatments displayed in Figure 1.6);
- Revising recruitment estimates.

Figure 1.4: The STarT MSK Tool (self-report version)

For questions 1-9, think about just the last two weeks:											
Pain intensity 1) On average, how intense was your pain [where 0 is “no pain” and 10 is “pain as bad as it could be”]?											
0	1	2	3	4	5	6	7	8	9	10	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

<i>Please cross one box for each question below</i>		Yes	No
2) Do you often feel unsure about how to manage your pain condition?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Over the last two weeks, have you been bothered a lot by your pain?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Have you only been able to walk short distances because of your pain?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Have you had troublesome joint or muscle pain in more than one part of your body?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) Do you think your condition will last a long time?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7) Do you have other important health problems?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8) Has pain made you feel down or depressed in the last two weeks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9) Do you feel it is unsafe for a person with a condition like yours to be physically active?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10) Have you had your current pain problem for 6 months or more?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Figure 1.5: The STarT MSK Tool (clinical version)

The Keele STarT MSK Tool © Clinician-completed version

For questions 1-9, think about just the last two weeks:

Pain intensity

1) On average, how intense was your pain? [where 0 is "no pain", 10 is "pain as bad as it could be"]

0	1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/> 0	<input type="checkbox"/> 0	<input type="checkbox"/> 0	<input type="checkbox"/> 0	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 3

	Yes	No
Pain self-management		
2) Have you been struggling to manage or control this pain by yourself? (e.g. using medication or exercises etc...)	<input type="checkbox"/> 1	<input type="checkbox"/> 0
Pain impact		
3) Over the last 2 weeks, have you been bothered a lot by your pain?	<input type="checkbox"/> 1	<input type="checkbox"/> 0
Walking short distances only		
4) Have you only been able to walk short distances because of your pain?	<input type="checkbox"/> 1	<input type="checkbox"/> 0
Pain elsewhere		
5) Are you having troublesome pain in more than one part of your body?	<input type="checkbox"/> 1	<input type="checkbox"/> 0
Long-term expectations		
6) Are you concerned you're developing a long-term problem?	<input type="checkbox"/> 1	<input type="checkbox"/> 0
Other important health problems		
7) Are you also having to deal with other important health problems at present?	<input type="checkbox"/> 1	<input type="checkbox"/> 0
Emotional well-being		
8) Have you felt anxious or low in your mood because of your pain?	<input type="checkbox"/> 1	<input type="checkbox"/> 0
Fear of harm		
9) Do you worry that physical activity could make your condition worse?	<input type="checkbox"/> 1	<input type="checkbox"/> 0
Pain duration		
10) Have you had your current pain problem for 6 months or more?	<input type="checkbox"/> 1	<input type="checkbox"/> 0

Red text represents coding applied if box ticked

Total maximum score = 12

0 – 4 = Low Risk, 5-8 = Medium Risk, 9 – 12 High Risk

Figure 1.6: The revised matched treatment options stratified by pain site and risk subgroup

L=Low-risk; M=Medium-risk; H=High-risk															
Tick mark (✓) denotes matched treatments															
	Back			Knee			Multisite			Neck			Shoulder		
	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H
1. Education and advice, including exercise, activity modification, weight loss, etc	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2. Simple oral and topical medications limited to those available over the counter	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3. Refer to physiotherapy/MSK service		✓	✓		✓	✓		✓	✓		✓	✓		✓	✓
4. Consider weak opioid if acute pain as alternative to NSAIDs		✓	✓		✓	✓		✓	✓		✓	✓		✓	✓
5. Consider corticosteroid injection					✓	✓		✓	✓					✓	✓
6. Refer to supported self-management or locally available community resources (eg, walking group, exercise on prescription/personalized exercise program, expert patient program, dietician, slimming world)		✓	✓		✓	✓		✓	✓		✓	✓		✓	✓
7. Consider atypical analgesia if neuropathic pain present (eg, amitriptyline, pregabalin, gabapentin)			✓			✓			✓			✓			✓
8. Consider referral to pain management service			✓			✓			✓			✓			✓
9. Consider referral to secondary care			✓			✓			✓			✓			✓
10. Consider imaging			✓			✓			✓			✓			✓
11. GP management of comorbidities, distress, frailty, polypharmacy and pain management			✓			✓			✓			✓			✓

1.10.4 Workpackage 4 – STarT MSK main trial

Following the pilot trial, the STarT MSK main trial investigated the clinical and cost effectiveness of stratified care for patients consulting primary care. The full protocol providing in-depth detail of the trial has been published, and has open access accessibility (Hill et al., 2020b). Clinical effectiveness was primarily measured through levels of pain intensity measured monthly for six months after the initial stratified care consultation. Secondary aims consisted of a health economic evaluation to determine the cost-effectiveness of stratified care, differences in patient outcomes (including physical, psychological, social and quality of life measures), and whether stratified care affects GP management of musculoskeletal patients. The trial was a two-armed cluster randomised controlled trial involving 24 GP practices (12 intervention and 12 control) across Central England, and ran from May 2018 to July 2019, recruiting 1203 patients. The findings from the trial are currently being analysed; initial reports have been sent to the Trial Steering Committee and Data Monitoring Committee, but not yet presented to the team. Results are

anticipated to be distributed to the team in mid-late September 2020 and disseminated to wider audiences after.

1.11 Summary

Musculoskeletal pain is a common condition in older adults, impacting significantly upon individuals' quality of life. It is essential that any approach to assessing and managing musculoskeletal pain in older adults acknowledges the biological, psychological and social aspects of pain and the specific challenges that presented in primary care consultations. Current assessment and management in primary care is problematic for older adults. Thus, as stratified care for musculoskeletal pain is being trialled in primary care services in the UK, it is crucial to examine how well the stratified care approach works for older adults. The next chapter will evaluate the current literature investigating stratified care for older adults, in order to develop the specific research questions to address the aim.

1.12 Thesis overview

The structure of the remainder of this thesis is presented below.

Chapter Two: Literature review

This chapter examines the research regarding stratified care for older adults; the literature relating to prognosis and prognostic models for older adults; and the expectations, perceptions, views and experiences of both older adults and clinicians upon primary care consultations for older adults with musculoskeletal pain. Specific research questions for the thesis were developed following this review and are presented at the end of the chapter.

Chapter Three: Methodology and methods

The methodology and methods of the thesis are presented, including the theoretical underpinning of pragmatism and mixed methods. The designs, methods and procedures used for both the qualitative and quantitative data collection are detailed.

Chapters Four and Five: Quantitative findings

These chapters present the methods and findings of the quantitative strand of the thesis, which used secondary data analysis of the KAPS and TAPS pilot datasets.

Chapters Six and Seven: Qualitative findings

These chapters present the findings from the clinician focus groups and interviews with older adults that formed the qualitative strand of the thesis.

Chapter Eight: Discussion

The quantitative and qualitative findings are summarised, compared to existing literature, and integrated in order to address the aim of the thesis. Strengths and limitations of the thesis, implications for stratified care and clinical practice, and suggested future research is discussed.

1.13 Style of thesis

The written style of this thesis will reflect its mixed methods design. Typically, scientific findings are written in third person, to portray objectivity in the results; however, employing third person in the presentation of qualitative findings portrays a passive tone which minimises the input that both the participants and researcher have in the process (Gilgun, 2005). It also distances the researcher from the context in which the data was collected and the findings, implying that the same findings will be found regardless of who undertakes the research (Johnson & Onwuegbuzie, 2004). Health research in particular has started to include qualitative first person research in experimental reports that are otherwise third person (Sandelowski & Leeman, 2012). Therefore, to represent both methods in this thesis, both first and third person will be used where appropriate.

Chapter Two: Literature review

2.1 Introduction

The previous chapter gave an overview of musculoskeletal pain, its impact on older adults, the current assessment and management pathway, introduced stratified care and presented the aim of the thesis. The purpose of this chapter is to discuss and analyse the literature available in order to generate novel research questions, which will be presented at the end of the chapter.

2.2 Aim of literature review

The aim of the thesis is to investigate the use of stratified care for older adults with musculoskeletal pain within primary care. To do this, three main components of stratified care have been identified: the prognostic tool used for risk stratification; the consultation in which stratified care is used; and the matched treatment options. Specifically, the literature review will first assess prognosis for older adults with musculoskeletal pain and the use of current prognostic tools with older adults. There is then a discussion and analysis of qualitative research examining patient experiences of stratified care. Finally, the wider primary care literature regarding older adults and musculoskeletal pain is examined.

This literature review is in narrative form. Narrative literature reviews are comprehensive, often addressing a broad aim; cover a wide range of literature and issues; and inform understanding of the whole topic (Collins & Fauser, 2005; Greenhalgh, Thorne & Malterud, 2018). In comparison, systematic reviews focus on one narrow research question with rigorous methods including a pre-designed search strategy; utilisation of inclusion and exclusion criteria; and assessment of the validity of each study (Gough & Richardson, 2018). There are strengths and limitations to both systematic and narrative reviews; given the broad aim of this study's literature review, a narrative review was decided to be the most appropriate approach. Whilst criticism has been directed at narrative reviews for being less

thorough than systematic reviews, narrative reviews are beneficial in terms of enabling interpretation and critique of a broad range of literature in addition to providing a holistic answer to the review's aim, and therefore should not be judged as inferior to systematic reviews (Greenhalgh, Thorne & Malterud, 2018).

Whilst this literature review was not systematic in its inclusion and analysis; a systematic search was undertaken to ensure that relevant literature was included, and the research questions generated aligned with the most up-to-date research. This search was iterative and undertaken through a number of strategies. The stratified care literature was searched first, although this is limited. Therefore, once the key stratified care papers had been identified, broader literature around primary care consultations for older adults with musculoskeletal pain were identified. This included research from a number of different disciplines, including epidemiology, psychology, sociology and gerontology. Firstly, key terms (stratified care; primary care; general practice; musculoskeletal pain; osteoarthritis; older adults and elderly) were used to search key databases (EBSCO, Web of Science, PsycInfo, PsycArticles, CINAHL, PubMed, and Medline via Ovid) for a broad overview of the literature. Key authors in the area were identified, and their publications searched. Additionally, once relevant papers were identified, references and citations were subsequently examined for extra papers.

2.3 Prognosis

Prognosis is an essential component of the risk stratification process for musculoskeletal pain. Therefore, this first section of the literature review examines the use of prognostic modelling in healthcare, for musculoskeletal pain, and for older adults.

In health care, prognosis predicts the likely course of a medical condition. More specifically, 'prognosis research is the investigation of the relations between future outcomes among people with a given baseline health state in order to improve health' (Hemingway et al.,

2013). Prognosis research is integral for all aspects of innovation in healthcare including clinical decision making, public health policy development, health services research, and the identification, evaluation and implementation of new approaches to treatment (Hemingway et al., 2013).

Prognosis is important for musculoskeletal pain conditions; often there is no identifiable aetiology of a condition and treatments are only moderately effective (Artus et al., 2007, Dansie & Turk, 2013). Therefore, in clinical settings, planning the management of musculoskeletal pain can be challenging. Using prognostic information facilitates management by enabling both the patient and healthcare professional to assess the likely trajectory of the condition; decide how best to manage the condition; and subsequently prevent worse future outcomes (Mallen et al., 2007). Prognostic factors are characteristics that can influence the outcome of a health condition. There are a number of factors associated with musculoskeletal prognosis. A systematic review in primary care identified that widespread pain, high functional disability, somatisation, and high pain intensity are generic prognostic factors for poor outcome (pain intensity, function etc.) in musculoskeletal pain (Artus, Campbell, Mallen, Dunn & van der Windt, 2017). Whilst the majority of studies in this review focused on back pain, there were also studies investigating neck, shoulder, knee, hip and multisite pain; highlighting the importance of targeting these factors across conditions. Additionally, although not all studies reported age ranges, a number of studies included older adults; indicating that these generic prognostic factors are important for patients of all ages. A previous review by Mallen et al. (2007) also identified higher levels of anxiety, depression and psychological distress; older age; use of coping strategies; and lower social support as prognostic factors for musculoskeletal pain. Importantly, across studies, older age is associated with poorer outcomes across a range of pain sites including low back, spinal, shoulder, general musculoskeletal, knee and elbow (Green et al., 2018).

2.3.1 Prognosis and musculoskeletal pain in the context of older adults

As identified above, studies investigating prognosis for musculoskeletal pain have included older adults. Prognosis is especially important for older adults with musculoskeletal pain due to their increased risk of adverse outcomes, particularly frailty which is associated with falls, hospitalisation and death (Ng et al., 2015; Rockwood et al., 2014; Veronese et al., 2017; Wade et al., 2016). Therefore, prognostic information about musculoskeletal pain could help to improve future health outcomes for older adults; as targeting modifiable prognostic factors could reduce the chance of poor outcome. Cohort studies that have explored prognostic factors for older adults with musculoskeletal pain identified increasing age, being overweight, having anxiety and more severe pain as being associated with worse future outcomes for knee pain (Belo, Berger, Koes & Bierma-Zeinsträ, 2009; Mallen, Peat, Thomas, Lacey & Croft, 2007). However, these studies included adults under the age of 65 with no stratified analyses by age; whilst this discrepancy is expected due to the ambiguous nature of the older adult definition, due to the heterogeneity of this population some of these factors may be more relevant to younger-older adults than the oldest old.

Despite the importance of these factors, in a cross-sectional survey over a third of General Practitioners (GPs) reported not discussing prognosis in consultations with older adults with osteoarthritis (Clarson, Nicholl, Bishop, Daniel & Mallen, 2016). The main reason cited, aside from lack of time, was uncertainty in the disease progression and individual prognosis of osteoarthritis; therefore, tools to assist GPs with prognostic information in a consultation are essential. When surveyed, the majority of older adults reported that they considered prognostic information about their musculoskeletal pain to be important in facilitating knowledge about their condition, planning for the future, coping, and in preventing health deterioration (Mallen & Peat, 2009). However, there were some older adults who did not think that prognostic information was important, and these participants reported a more fatalistic attitude to their pain, stating that there is no point in knowing, that 'nothing could be done', progression was inevitable and predictions would not be accurate (Mallen & Peat,

2009). Reviewing these studies together, a dissonance can be seen between the views of older adults and the actions of GPs; whilst older adults would generally like prognostic information, GPs did not feel confident to discuss this information. There was also variation between the attitudes and expectations of older adults; some older adults did not think that prognostic information was important. Acknowledging this variation and being able to tailor communication to individuals is especially important for healthcare professionals in planning future care, as they are likely to need to manage comorbidities and polypharmacy alongside musculoskeletal pain (Reid, Eccleston & Pillemer, 2015).

Incorporating prognostic data collection into a consultation with older adults does not have to be time consuming; Mallen et al., (2013) found that incorporating three prognostic questions alongside the GP's own prognosis judgement predicted poor outcome in terms of improvement compared to the previous consultation. The questions: duration of present pain episode, pain interference with daily activities, and presence of multisite pain, were asked as part of a routine GP consultation for musculoskeletal pain, demonstrating the ease in which prognostic information can be integrated into a consultation in primary care with older adults.

These research findings demonstrate the importance of prognosis research for older adults, and the ability for prognostic information to be generated and incorporated into GP consultations for musculoskeletal pain.

2.3.2 Prognostic tools for musculoskeletal pain in primary care

Prognostic tools are questionnaires that incorporate known prognostic risk factors in order to predict a patient's risk of poor outcome for a particular health condition. It is important that prognostic tools are both valid and reliable. Validity refers to how well a tool measures what it is intended to measure (i.e., how appropriate, useful and accurate the tool is), whilst reliability measures how free from error and reproducible the results are (Jensen, 2003). The

main types of validity and reliability used in the development of prognostic tools are presented in Table 2.1.

Table 2.1: Types of reliability and validity for prognostic tools

Type	Definition
Internal validity	Testing of the tool/questionnaire in the same population in which it was developed
External validity	Testing of the tool/questionnaire in a different sample than the one in which it was developed
Content validity	The degree to which the items of a tool/questionnaire represent the domain or topic of interest
Construct validity	The extent to which the tool/questionnaire assesses the domain of interest
Discriminant validity	The extent to which the tool/questionnaire is able to distinguish between separate groups of participants (for example, high risk and low risk)
Predictive validity (criterion validity)	The extent to which the tool/questionnaire associates with the desired outcome
Face validity	Whether the tool/questionnaire appears to be measuring the domain of interest (to participants, clinicians and researchers)
Internal reliability	How well a set of items in the tool/questionnaire measure the same underlying construct
Test-retest reliability	The ability of the tool/questionnaire to provide stable scores over time

(Adapted from Jensen (2003) and Dijkland, Helmrigh & Steyerberg (2018)).

Validity is arguably the most important measure of a tool or questionnaire, and once developed, it is essential that a prognostic tool is validated in data other than that used in the development process (Jensen, 2003; Steyerberg et al., 2013). Indeed, the Prognosis Research Strategy Group advise that a prognostic tool can only be described as clinically valid if first validated in an external sample (Steyerberg et al., 2013). There is currently no set standard process for validating prognostic tools; the types of validity tested for depend upon the stage of development and purpose of the tool.

Despite the importance of prognosis for musculoskeletal pain in primary care, only a few prognostic tools have been developed. Considering the potential severity of poor outcome

(persistent disabling pain) associated with older adults with musculoskeletal pain, identifying those at risk of poor prognosis in primary care is a priority. A systematic review in 2017 analysed the use of prognostic tools for acute low back pain across published research, concluding that the Örebro Musculoskeletal Pain Screening Questionnaire (ÖMPSQ; Linton & Boersma, 2003) and the STarT Back Tool were the most widely used tools for predicting prognosis for musculoskeletal conditions in primary care (Karran et al., 2017). Both of these tools combine psychosocial and physical factors to predict outcomes for people with musculoskeletal pain. However, despite the prevalence and potential severity of musculoskeletal pain in older adults, neither of these tools were validated in older adults. Development and validity analyses of the ÖMPSQ excluded patients aged over 63 (Linton & Hallden, 1998) and 66 (Linton & Boersma, 2003) for the original ÖMPSQ; and patients aged over 60 for the Short-Form ÖMPSQ (Linton, Nicholas & MacDonald, 2011). For the STarT Back Tool, although the STarT Back and IMPaCT Back studies included older adults in their samples (STarT Back age range: 18-87; IMPaCT Back inclusion criteria >18), the sample used for the validation of the STarT Back Tool only included adults aged 18-59. Therefore, the validity of prognostic tools for musculoskeletal pain for older adults is unknown.

2.3.3 Prognostic tools for older adults

As the literature examining prognostic tools for older adults with musculoskeletal pain is limited, a wider scope of prognostic health literature for older adults has been examined. Two areas where prognostic tools are often used for older adults in healthcare settings is for the prediction of falls and frailty. Where possible, to complement the intended use of the STarT MSK Tool, the discussion will focus on community-dwelling older adults, rather than older adults in hospitals or care homes.

2.3.3.1 Prognostic tools for falls in older adults

In the United Kingdom (UK), around a third of people aged 65 and over, and half of people aged 80 and over, experience a fall each year (Public Health England, 2020). Older adults

experience the greatest number of fatal falls, and therefore it is important to be able to screen risk factors and predict the likelihood of an older adult experiencing a fall (World Health Organisation, 2018). Due to the severity of fall-related injury, it is essential that screening and prognostic tools are sufficiently tested for validity such that it should accurately discriminate fallers from non-fallers when used in clinical practice.

A 2017 systematic review identified 33 studies investigating 26 different prognostic falls tools for use with older adults in the literature (Park, 2017). All of the studies included in the review tested the predictive validity of a fall risk assessment tool in people aged ≥ 60 . The tools were used across a mix of settings: mostly in the community but also acute care hospital wards and long-term care homes. The majority of tools (20 out of 26) were assessed in only a single study, limiting the reliability of these findings. Of the tools that had been assessed more than once, three were used in community settings: The Berg Balance Score (Berg et al., 1989), Timed-Up-and-Go Test (Podsiadlo & Richardson, 1991), and the Tinetti Balance Scale (Tinetti, 1986). Predictive validity was measured using sensitivity (the amount of actual positive cases that the tool correctly predicts) and specificity (the amount of actual negative cases that the tool correctly predicts). This is reported on a zero to one scale: the higher the score the better the accuracy of the tool, with 0.50 representing the likelihood of correct predictions purely by chance. Whilst the Berg Balance Score showed high pooled sensitivity and specificity (0.73, 0.90), the Timed Up and Go Test and the Tinetti Balance Scale had good sensitivity but low specificity (0.76, 0.49 and 0.68, 0.56 respectively; Park, 2017). Therefore, it was concluded that overall, the predictive validity for currently used falls-risk prognostic tools is not sufficient and is in need of improvement.

A key finding to consider from this systematic review is that the choice of tools depended upon the setting in which they were used. For the tools most commonly used in hospital settings, fall risk was assessed by medical staff based on items such as conscious state, urinary function, and polypharmacy. Conversely, for the tools most used in the community,

assessments were made by directly measuring balance and ability in everyday activities such as walking up and down stairs, mobility and speed. Therefore, given the primary care context of the STarT MSK Tool and this thesis, it would be prudent to examine a fall-risk prognostic tool developed for use in primary care.

One such tool is the Fall Risk Assessment Tool (FRAT); which was developed for primary care use in the UK (Nandy et al., 2004). The tool was designed to have two parts: 1) to identify older adults at high risk of falling; and 2) to provide guidance and intervention for the management of those identified as high risk. Part 1 of the FRAT was developed from risk factors identified in previous reviews, which were then refined through expert consensus, piloting and feedback into four yes or no questions that could be asked in a GP consultation:

1. Have you had a fall in the last 12 months?
2. Are you on 4 or more medications a day?
3. Do you have Parkinson's Disease or have you had a stroke?
4. Do you feel unsteady or have problems with balance?

Predictive validity of the FRAT was examined through a postal questionnaire to people aged ≥ 65 in one locality in England, with a follow-up six months later. The FRAT's ability at baseline to predict falls in the next six months was mixed; it reported high specificity (0.92) but lower sensitivity (0.57). This means that the tool could accurately predict older adults not likely to have a fall, but that almost 40% of those identified as being high-risk would not go on to experience a fall. This would result in over-treatment of a large proportion of the high-risk population that is not needed, and therefore a rise in costs (National Institute for Care and Excellence, 2013). Despite this, the FRAT is still used as a use-at-home risk screening tool for older adults in combination with other tools (e.g., the Timed-Up and Go Test) on the National Health Service (NHS) Live Well website (Live Well, 2020). The development of the FRAT, in addition to the systematic review of fall prognostic tools demonstrates the complexity in developing prognostic tools for use with older adults; they may need to be setting-specific, useable in general practice but also have high predictive validity for both

sensitivity and specificity. A key consideration when comparing falls-risk prognostic tools to musculoskeletal prognostic tools is the types of factors included in each tool. The tools used for falls-risk assessment rely heavily on physical factors; particularly observed physical ability and specific medical information. In comparison, the STarT MSK Tool and other musculoskeletal screening tools include psychosocial factors and are designed to be completed by the patient, either through self-report or in a consultation. Therefore, exploration of other screening tools that include psychosocial factors also needs to be included.

2.3.3.2 Prognostic tools for frailty in older adults

Frailty is a broad, multidimensional concept including biological, physical, psychological and social factors. As discussed earlier in the thesis, frailty can have severe implications for older adults' health and wellbeing (see section 1.4.1). Importantly, frailty is not an inevitable part of ageing, if risk factors and progression are identified early and managed frailty can be reversed (Ma, 2019). As such, a large number of frailty screening tools have been developed for use in research and clinical practice. One review of frailty screening tools describes 18 assessment tools that are often used (Ma, 2019). Some of these tools (e.g., Fried's Frailty Phenotype – Cardiovascular Health Study index) focus purely on the physical characteristics of frailty, mainly unintentional weight loss, weakness, exhaustion, slowness and lack of physical activity (Fried et al., 2001). However, for the purposes of this review, this section will focus on tools that include psychosocial characteristics. Similar to musculoskeletal pain, it is well established that psychosocial characteristics are key factors that predict poor outcome for frailty. Factors such as loneliness, social involvement and support, maladaptive coping styles, anxiety, and depression have been shown to be linked with a higher risk of frailty in numerous populations (Freer & Wallington, 2019; Levers, Estebrooks & Kerr, 2006).

Two systematic reviews have identified many multidimensional frailty tools (Dent, Kowel & Hoogendijk, 2016; Pialoux, Goyard & Lesourd, 2012). From these reviews, five commonly

used tools that have been examined for predictive validity in community-dwelling older adults or primary care have been identified: the Frailty Index – Comprehensive Geriatric Assessment (FI-CGA; Jones, Song & Rockwood, 2004); Groningen Frailty Indicator (GFI; Peters, Boter, Buskens & Slaets, 2012); PRISMA-7 (Raïche, Hébert & Dubois, 2008); Sherbrooke Postal Questionnaire (SPQ; Hébert, Bravo, Korner-Bitensky & Voyer, 1996); and the Tilberg Frailty Indicator (TFI; Gobbens, van Assen, Luijkx, Wijnen-Sponselee & Schols, 2010). An overview of these tools and their validity is given in Table 2.2.

As shown in Table 2.2, the tools with the best predictive validity as indicated by the initial development and validity papers were the Tilberg Frailty Indicator and PRISMA-7. A comparison of the psychometric properties of the TFI, GFI and SPQ in 687 community-dwelling older adults in the Netherlands found that both the TFI and GFI had high internal consistency and good construct validity, indicating that the tools were indeed assessing frailty (Metzelthin et al., 2010). In comparison, despite being developed as a postal questionnaire, the SPQ did not seem well-suited to this population. Following this, of the 687 community-dwelling older adults that responded to the initial questionnaire, 430 replied to follow-up questionnaire a year later to investigate the predictive validity of the tools for development of disabilities, hospital admission and mortality (Daniels et al., 2012). When analysed in this sample, all three tools had poor discrimination. Using the Area Under the ROC Curve statistic (AUC), which measures both specificity and sensitivity from 0 to 1 (1 being 100% correct, 0.5 equalling correct prediction due to chance,) the highest AUC value was 0.67 (GFI for development of disabilities). In the prediction of all outcomes, the SPQ had the lowest specificity (ranging from 0.41 to 0.48), however it had the highest specificity for development of disabilities (0.83). The findings from this study suggest that further work needs to be undertaken for these three tools to improve the predictive power, when used in this context. However, it is important to consider that frailty risk assessment usually takes place in a consultation with healthcare professionals and the older adults themselves, rather than self-reported postal questionnaires.

Table 2.2: Overview of multidimensional frailty tools for older adults

Tool	Components	Responses	Frailty score	Validity results	Notes
Frailty Index – Comprehensive Geriatric Assessment (FI-CGA)	1) Cognitive status (impairment or dementia); 2) Mood and motivation; 3) Communication (vision, speech, hearing); 4) Mobility; 5) Balance; 6) Bowel function; 7) Bladder function; 8) Activities of daily living; 9) Nutrition; 10) Social resources (need for additional help); 11) Comorbidities.	0 = no problem 1 = minor problem 2 = major problem	0–7 = mild 8–13 = moderate >13 = severe	AUC: 0.66	52 items scored into the 11 domains. Adults aged ≥70.
Groningen Frailty Indicator (GFI)	1) Physical factors: independence in shopping, walking, dressing, toileting; physical fitness, vision, hearing, weight loss and polypharmacy; 2) Cognitive factors: memory; 3) Psychological factors: feeling down or sad, feeling worried or anxious; 4) Social factors: emptiness, missing others, feeling abandoned.	Yes/No	0–15 (normal physical activity–completely disabled) ≥4 indicates frailty	Sensitivity: 0.71 Specificity: 0.63 AUC: 0.67 (0.61–0.73)	Self-report and professional versions. Validity for self-report version. Adults aged ≥65.
PRISMA-7	1) Over 85; 2) Male; 3) Self-reported health problems that limit activities; 4) Needing someone to help regularly; 5) Having health problems requiring to stay at home; 6) Someone to count on; 7) Regularly using a stick, walker or wheelchair.	Yes/No	≥3 indicates frailty	Sensitivity: 0.78 Specificity: 0.75 AUC: 0.84 (0.80–0.88)	Can be administered by GP or nurse. Adults aged ≥75.

Table 2.2 continued: Overview of multidimensional frailty tools for older adults

Tool	Components	Responses	Frailty score	Validity	Notes
Sherbrooke Postal Questionnaire (SPQ)	1) Living alone; 2) Taking more than three medications a day; 3) Regularly using a cane, walker or wheelchair; 4) Vision; 5) Hearing; 6) Problems with memory.	Yes/No	≥1 indicates risk of functional decline ≥2 indicates frailty	Sensitivity: 0.75 Specificity: 0.52 AUC: 0.65	Postal questionnaire to adults living in the community. Adults aged ≥75.
Tilberg Frailty Indicator (TFI)	1) Physical domain: health, mobility, balance, sensory functions, strength; 2) Psychological domain: cognition, feeling down, feeling anxious; 3) Social domain: living alone, loneliness, social support.	Yes/No /Sometimes	0–15 (No–high frailty)	Sensitivity: 0.84 Specificity: 0.76 AUC: 0.86 (0.81–0.92)	Adults aged ≥75.

In a report by the British Geriatrics Society, Age UK and the Royal College of General Practitioners, both the FI-CGA and PRISMA-7 were recommended for clinical use in identification and management of frail older adults in the UK (Turner & Clegg, 2014). For the recognition of frailty, the PRISMA-7 was recommended in combination with a timed-up-and-go test as simple assessments that can be used by health and social care staff. The FI-CGA was referred to when deciding appropriate management options, due to its in-depth assessment of many specific factors (e.g. nutrition, bowel function, communication needs and social resources). The report highlighted that use of these tools within health and social care for older adults can help to provide a more integrated, person-centred and multidimensional approach, moving away from seeing frailty as simply a 'disease' (Turner & Clegg, 2014).

2.3.3.3 Implications for musculoskeletal screening tools for older adults

Reviewing the literature around falls and frailty risk assessment prognostic tools has multiple implications for the development of musculoskeletal prognostic tools for older adults.

Both frailty and musculoskeletal pain were traditionally seen as 'disease'; that is purely physical conditions without consideration of psychological and social factors. It is only recently in medical research for both conditions that psychosocial factors have been identified as strong predictors for poor outcome. The high predictive validity of multidimensional tools such as the Tilberg Frailty Index and the PRISMA-7 demonstrate the importance of including psychological and social factors in all prognostic tools for older adults.

Both the falls and frailty literature have had many prognostic tools developed, with variance in factors, aim, populations and validity. Examination of these tools demonstrates the importance of developing a tool appropriate for the setting and

population in which it will be used. For use in clinical practice, analysis of tools needs to go beyond internal predictive validity and consider how the tool will be used, its face validity for both clinicians and patients, and use outside of designated contexts.

2.4 Implementing stratified care for musculoskeletal pain

This section of the literature review will focus on research investigating both patient and healthcare professional views, experiences and perceptions towards consultations utilising a stratified care approach and the matched treatment options. Eight qualitative studies were identified, primarily focused on exploring clinicians' views, and with the majority aiming to investigate the barriers, facilitators and acceptability of adopting stratified care into clinical practice. A visual of these studies is given in Figure 2.1, displaying the similarities and differences in the study designs. Only three of these studies were with clinicians who had experienced stratified care integrated into primary care consultations, these were all nested in randomised clinical trials or implementation studies. The first of these studies was conducted as part of IMPaCT Back, the implementation study following the STarT Back trial, and investigated the views of GPs in the UK before and after using stratified care in primary care consultations (Sanders, Foster & Ong, 2011). The other two studies were nested in large randomised controlled trials of stratified care for musculoskeletal pain and sciatica respectively, and interviewed both patients and clinicians (Saunders et al., 2020a; Saunders et al., 2020b). In comparison, the five remaining identified studies explored the potential implementation and development of stratified care, without participants having experience of using it. Of these, only one study (Saunders et al., 2016) focused on general musculoskeletal pain and included patients; the others focused on low back

Figure 2.1: Designs of qualitative stratified care studies

	Sanders, Foster & Ong, 2011	Karstens et al., 2015	Saunders et al., 2016	Karstens et al., 2018	Caerio et al., 2019	Zoubi et al., 2019	Saunders et al., 2020a	Saunders et al., 2020b
Participants had experience of stratified care	✓						✓	✓
Hypothetical		✓	✓	✓	✓	✓		
Low back pain/sciatica	✓	✓		✓	✓	✓		✓
Musculoskeletal pain			✓				✓	
GPs	✓	✓	✓		✓		✓	✓
Physiotherapists				✓	✓		✓	✓
Other healthcare professionals						✓ (Chiropractors)		✓ (Spinal surgeons)
Patients			✓				✓	✓

pain and interviewed clinicians only (Caerio et al., 2019; Karstens et al., 2015; Karstens et al., 2018; Zoubi et al., 2019). The eight studies identified were conducted in various Western countries: the United Kingdom (Sanders, Foster & Ong, 2011; Saunders et al., 2016; Saunders et al., 2020a; Saunders et al., 2020b); Canada (Zoubi et al., 2019); Germany (Karstens et al., 2015; Karstens et al., 2018) and Portugal (Caerio et al., 2019). Common themes identified across studies are discussed below.

The IMPaCT Back study was the only study to interview participants before and after using stratified care, comparing expectations and experience (Sanders, Foster & Ong, 2011). Prior to using stratified care, GPs reported that low back pain was a common complaint that they were confident in managing; their main difficulty was patients' lack of awareness in the condition resulting in unnecessary consultations. After using stratified care in clinical practice, GPs reported that use of the STarT Back tool was a lower priority than other tasks (such as the Quality and Outcomes Framework), reinforcing the view that back pain has a lower priority compared to other conditions in busy time-pressured consultations. However, despite this lower priority, GPs in other studies were concerned whether the stratification tool would have the ability to appropriately account for the complexity in decision-making which they attributed to low back pain consultations; particularly in the area of prescribing pain medications (Karstens et al., 2015; Saunders et al., 2016). Furthermore, GPs were concerned about overwhelming physiotherapists with referrals of patients with psychosocial issues. GPs reported welcoming support from physiotherapists in the management of high-risk patients, but felt that treating their complexity could be very clinically challenging; especially when severe complex psychological problems are presented (Karstens et al., 2015). Physiotherapists reflected on their abilities to manage high-risk patients, with some anticipating difficulty due to a lack of psychosocial training, voicing that there was a need for a high-risk training programme to be included in stratified care implementation to cover the key aspects of psychologically-informed practice

(Caerio et al., 2019; Karstens et al., 2018). One further recommendation by both GPs and physiotherapists in order to address this concern and successfully implement stratified care was to improve communication between GPs and physiotherapists in this process (Caerio et al., 2019; Karstens et al., 2015; Karstens et al., 2018). Stratified care could aid this communication through knowledge of a patient's risk score facilitating greater inter-professional collaboration and shared treatment approaches. However, this is threatened by physiotherapists' perceptions that in some instances GPs had limited levels of trust in their abilities and education (Karstens et al., 2018). This may reflect the setting of this study; the studies by Karstens et al., (2015; 2018) were conducted in Germany, in which physiotherapists do not require a degree to practice; instead becoming qualified through vocational experience (Karstens et al., 2018).

Clinicians identified a number of benefits of using stratified care in the management of back pain: for GPs it was felt that the stratification tool could speed up clinical decision making and support explanations of back pain; with physiotherapists reporting that it highlighted the relevance of psychosocial factors in management (Karstens et al., 2015; 2018). This could then be associated with better outcomes both for the healthcare system (increased clinical effectiveness; increased quality of healthcare provided), and for patients (less pain, better function, faster recovery) (Caerio et al., 2019; Zoubi et al., 2019). Whilst physiotherapists discussed the positive benefits of stratified care encouraging self-management and self-reflection in patients, it was felt that the negative aspects included some patients lacking the intrinsic motivation to be involved in their treatment, preferring a passive management approach, which was not compatible with treatment to address psychosocial factors (Karstens et al., 2018). To address this, both GPs and physiotherapists discussed a need for specific training; with physiotherapists describing stratified care as a 'paradigm shift' from focusing on

treating a pathology or an injury, to encouraging patient self-management and addressing complex barriers to recovery (Caerio et al., 2019).

When considering if stratified care should be used in clinical practice, this was mostly acceptable to both clinicians and patients. Stratified care was most likely to be successfully adopted if clinicians felt that it met addressed their priorities such as reducing medication prescriptions and referrals for scans (Caerio et al., 2019).

Chiropractors reported being confident in and having an intention to use stratified care in their clinical practice in Canada (Zoubi et al., 2019). However, studies also reported clinicians' concerns about the potential negative influences that a stratified care treatment approach could have upon the consultation. One factor discussed across multiple studies was the impact that using the subgrouping tool in practice may have upon the interpersonal elements of a GP consultation. Whilst it was felt that stratified care could enhance the therapeutic relationship by introducing otherwise unspoken or difficult topics; it was important that the process did not feel impersonal, out of place in the consultation, or disrupt non-verbal communication between the patient and clinician (Karstens et al., 2015; Saunders et al., 2016). Critical to this is the time available; GP consultations are very time limited with little time to establish rapport; therefore, the addition of completing the subgrouping tool may be a barrier to using stratified care (Karstens et al., 2015; Saunders et al., 2016; Zoubi et al., 2019).

GPs also expressed concerns specific to their clinical practice, behaviours and role; in particular following a treatment pathway based upon a prognostic tool, rather than a diagnostic approach, which many reported feeling more comfortable with (Saunders et al., 2016). In relation to patients stratified into the low risk subgroup, GPs felt that it was important for them to be aware of local and community facilities and resources to recommend (Karstens et al., 2015). It was felt that being able to provide this information to patients would boost confidence in primary care and encourage low risk

patients to engage in exercise; however, not all GPs felt that they had knowledge to support these recommendations, wishing for support in collating this information (Karstens et al., 2015). Therefore, it is also important that the matched treatment options presented to GPs align with those available locally (Saunders et al., 2016).

Differences in the types of health systems used in each country may also result in barriers to implementing stratified care; in Germany, due to the way that the health system is financed, physiotherapists are remunerated per session, thereby reducing overtreatment of patients may have financial implications. Additionally, physiotherapists also discussed receiving higher wages for the added responsibilities associated with treating high risk patients in stratified care approach (Karstens et al., 2018).

Whilst still using stratified care, the qualitative paper completed as part of the SCOPiC trial had a slightly different focus than the other papers; focusing on the acceptability of using a fast-track pathway to imaging for patients with sciatica (Saunders et al., 2020b). However, some findings are similar to the themes discussed above. Some clinicians expressed reservations of the pathway as there were expectations that in most cases, sciatica will resolve naturally over time, without the need for intense treatments and referrals (Saunders et al., 2020b). Furthermore, for patients who did receive the 'fast-track pathway', although there was an initial benefit regarding reassurance from the scan results, this was then counteracted by the subsequent long waiting times for treatments through usual care, leaving patients feeling frustrated and disappointed, without resolution for their pain.

Most studies explored the practical aspects of integrating stratified care into clinical primary care practice, and found that stratified care was acceptable, and could identify benefits in its use; particularly in highlighting psychosocial factors and management

options. One of the main reservations of utilising stratified care was complexity. Firstly, some GPs felt that the tool itself did not capture the complexity of musculoskeletal pain, especially low back pain as a condition. Secondly, it was felt that the stratified care process in which high risk patients were mainly seen by physiotherapists was a concern as physiotherapists might not be equipped to handle patients' complex psychosocial needs.

However, the designs and methods used in some studies were limited and produce complexity in the comparison of results. In the five studies which sought hypothetical views on the anticipated impact of stratified care, participant views relied on the information about stratified care given by the researchers rather than personal experience; and therefore may be limited and liable to change with experience. Three of the six studies discussed used content analysis (Karstens et al., 2015; 2018; Zoubi et al., 2019), which whilst useful can also be reductive, lack interpretation and remove context from the original data. Two of these studies (Karstens et al., 2015; 2018) also deductively constructed themes from the topics covered in the interview guide; potentially resulting in reduced interpretation of the data. Furthermore, although in some studies clinicians of different professions (e.g. GPs, physiotherapists) were recruited, focus groups were separate for each profession. Due to the interdisciplinary nature of stratified care, it would be useful for focus groups to combine professions involved in order to gain a more holistic view. Finally, patient views are extremely underrepresented in the stratified care literature; only three studies included patients in addition to clinicians, and these three studies were all carried out by the same research team (Saunders et al., 2016; Saunders 2020a; Saunders 2020b). Despite older adults being included in these patient samples, there were no older adult specific findings reported. Therefore, to further develop the research questions for this thesis, the review will now focus on literature outside of the stratified care domain, in order to gain a deeper insight into issues pertinent to older adults.

2.5 Perceptions of musculoskeletal pain in older adults

Before discussing the literature investigating primary care consultations specifically, the pain perceptions of older adults will be explored. This will not review biological changes associated with pain intensity or severity and ageing, but rather the attitudes, beliefs and expectations older adults have towards musculoskeletal pain. As pain is a subjective experience, these psychological and social factors will influence self-reporting of pain, assessment of pain in a primary care consultation, and treatment behaviours.

2.5.1 Describing pain

The majority of pain assessment techniques rely on older adults describing their pain, particularly so in a primary care consultation. Often this involves sharing information about practical and functional limitations relating to their illness representations of the pain. Makris et al. (2014) found that older adults tended to report their pain in terms of impact, describing their pain as restricting their activity, and the variation in flares and episodes that can occur. The types of questions used to elicit pain information can affect how older adults report pain. When asked open ended questions about their musculoskeletal pain, older adults tended to report multiple pieces of information, particularly the pain location, timing and response (McDonald, 2009). However, when asked a closed question regarding pain (e.g. rating pain intensity on a numerical rating scale), little additional information is given. Furthermore, there is often diversity in the extent to which older adults feel able to put a numerical rating on pain intensity. Whilst some older adults find this easy – particularly if they report pain at an extreme end of the spectrum – others find it difficult to quantify the variability that pain has both short term (e.g. within a single day) and longer term (e.g. over the last month) (Clarke et al., 2012). Rather, older adults tended to naturally construct ‘stories’ of their pain; using similes and metaphors to communicate the pain experience, which may be elicited

through the use of open-ended questions (Clarke et al., 2012; McDonald 2009). This 'story' then goes on to explain the impact that pain has on their everyday life; for example, completing jobs around the house and affecting social relationships due to function restrictions (Clarke et al., 2012). However, in the current primary care setting, consultations are time-limited, potentially preventing older adults from explaining their pain fully this way. A compromise whereby primary care practitioners use open-ended questions to begin, followed by more narrow questions may help to address this challenge whilst also offering older adults the space to explain their pain in the most comfortable way.

2.5.2 Perceptions of the causes of pain

Beliefs regarding the cause of musculoskeletal pain can have a significant impact upon engagement in health care services. Osteoarthritis in particular has an association with simply being a 'normal part of ageing', rather than a serious health condition. Through interviews and diaries, older adults with osteoarthritis considered the condition as a part of the normal ageing process, requiring acceptance rather than treatment (Jinks, Ong & Richardson, 2007). Discussion from interviews and focus groups illustrated that the symptoms of arthritis hold meaning; symbolizing getting older, acting as a warning to 'be more careful', and the inevitability of pain with age (Gignac et al., 2006; Sanders, Donovan & Dieppe, 2002; Turner, Barlow, Buszewicz, Atkinson & Rait, 2007). This minimises the significance of arthritis as a disruptive health condition requiring intervention. Indeed, in both individual and group conversations with researchers, the phrase 'wear and tear' of the cause of arthritis is commonly used (Gignac et al., 2006; Makris et al., 2014; Molton & Terrill, 2014; Turner et al., 2007). Often, this viewpoint was initiated or reinforced by health professionals, including GPs. When this occurred, older adults were encouraged to simply 'get on with it' and accept their new limitations, resulting in older adults feeling that their pain is not controllable, and they are helpless in its management.

However, despite this minimisation and normalisation of musculoskeletal pain as just being a sign and symptom of ageing occurring in consultations, when asked about the impact that the problem is having on their daily lives, older adults can often report significant and severe disruption and disability. Consequences of musculoskeletal pain for some can be very significant including being in constant pain; restrictions in mobility and function; difficulties leaving the house and remaining independent; and feelings of depression (Makris et al., 2014; Sanders, Donovan & Dieppe, 2002; Sofaer et al., 2005). This contrast in the reports suggests a division in the way that 'health' or 'wellbeing' are conceptualised. Indeed, research has found that many older adults when reporting their experience of musculoskeletal pain also define themselves as being 'healthy', or as having 'aged successfully' (Collis & Waterfield, 2015; Grime, Richardson & Ong, 2010). Older adults still living independently in the community may judge their 'health' and 'wellness' through their cognitive and mental abilities and the ability to continue with their everyday routines and activities despite physical decline (Grime et al, 2010). For joint pain, this was endorsed by the perception of osteoarthritis as being 'normal wear and tear', rather than a health condition needing intervention and treatment. Notably, having a diagnosis – even if that diagnosis was arthritis – rather than having to describe their pain as non-specific 'aches', reportedly gave some form of control and validation to participants, as the pain now had a known identity (Collis & Waterfield, 2015). Despite this positive perspective towards their pain, when these same older adults did consult primary care they reported feeling neglected, not taken seriously and as an individual person, due to the clinician reducing their presentation simply to age. Of note, participants interviewed in this study were aged 75 or over, placing them in the 'oldest' older adult category, and so this perception may not be shared by the 'younger' older adults (Collis & Waterfield, 2015). Therefore, whilst conceptualising joint pain as 'normal wear and tear' may be a comforting perception, this is more typically only the case when it is constructed personally by an

older adult; when constructed by a clinician this can be seen as dismissive and uncaring.

2.6 Primary care consultations for older adults with musculoskeletal pain

This section will discuss the factors associated with older adults consulting primary care for musculoskeletal pain; the dynamics of these consultations and factors that may impact upon this.

2.6.1 The decision to consult

Older adults' decision to consult a GP for musculoskeletal pain is multifaceted. As discussed above, age related beliefs normalising musculoskeletal pain in older adults are common in both older adults and GPs. Ageism by healthcare professionals is not uncommon; often older adults are stereotyped and instead of viewing patients in their individual contexts, clinicians assume that the whole group embody the same clinical characteristics (Ouchida & Lachs, 2015). This often leads to undertreatment of health conditions in older adults. Indeed, the ageism in labelling osteoarthritis as to be expected with age impacts upon an older adult's motivation and decision to seek help. Patients attending general practice in the UK reported that anticipating that the GP will simply regard musculoskeletal pain as a normal part of the ageing process discourages them from consulting primary care (Coxon et al., 2015). From the older adult's perspective, this leads to a conclusion that if degeneration is inevitable with no cure, then subsequently there is no reason to attend primary care consultations (Makris et al., 2014; Cornally & McCarthy, 2011).

A second factor influencing older adults' likelihood of consulting is their expectation of the likely outcomes from the consultation. In an extended literature review, fearing loss of independence was found to be strongly associated with reduced help-seeking for older adults (Gammons & Caswell, 2014), and may manifest through non-disclosure of

pain as a way to stay feeling in control (Lansbury, 2000). Additionally, this is also often associated with expectations of having to take medication, which can be perceived as removing an older adult's ability to manage their pain themselves (Crowe et al., 2017). Therefore, if the primary notion of musculoskeletal pain is of a biological or physiological cause (such as wear and tear on the bones) then it is likely that older adults will expect the GP to prescribe medication. This is especially pertinent as older adults with musculoskeletal pain are likely to also have other comorbid health conditions, which require medication to manage. Older adults often report being worried about possible interactions between medications prescribed for their musculoskeletal pain and those used for other health conditions (Makris et al., 2016). Often, musculoskeletal pain is perceived as less important than other health conditions by the older adults themselves in addition to healthcare professionals, which results in the choice to take medication for the comorbidities rather than the pain (Crowe et al., 2017; Makris et al., 2016). Prioritisation of health conditions for patients with comorbidities can be transient, and can be influenced by contact with health professionals, particularly if there is incongruence between patients' and clinicians' priorities (Morris, Sanders, Kennedy & Rogers, 2011). Therefore, if a GP is normalising musculoskeletal pain for older adults and minimising its importance in a consultation this could reinforce the belief that musculoskeletal pain is of lower priority than other conditions. Osteoarthritis in particular is often perceived as a lower priority condition; in a study investigating comorbidities in people with arthritis, a minority of patients prioritised the arthritis over other health conditions (Cheraghi-Sohi et al., 2013). Participants were more likely to 'background' their osteoarthritis in relation to other health conditions or shift priorities in response to the impact that specific health conditions are currently having. Additionally, there are systemic issues that can be a barrier to consulting for older adults. Long wait times and subsequent frustration in getting appointments with GPs can be demotivating, especially if this is in conjunction with the other factors discussed above (Prasanna, Korner-Bitensky & Ahmed, 2013).

2.6.2 Expectations of the consultation

Often the decision to consult is based upon older adults' expectations of the consultation. This has been discussed above in relation to perceptions of musculoskeletal pain and potential prescriptions of medication as treatment. However, very few studies have investigated what older adults do expect from healthcare consultations. One of the only studies in this area investigated differences in expectations by age through questionnaires and interviews (Jaworski et al., 2017). This study categorised adults aged over 50 into 'younger adults' (50-64); 'young-old' (65-74); 'middle-old' (75-84); and 'old-old' (85+). Pre-consultation, younger adults reported higher expectations that older adults for disease explanation and treatment explanation. The 'old-old' group reported the highest expectations of emotional support from their consultation. Post-consultation, younger adults reported that the clinician had less of a focus on emotional support and quality of life than older adults. The 'old-old' group displayed the most emphasis upon rapport in the consultation. This demonstrates that firstly, discrepancies between expectations and experiences often exist in relation to healthcare consultations, and secondly the variance observed between different age categories. Similar findings were reported by Hofman et al., (2015), who investigated older adults' health valuations through a vignette study; participants rated their interpretations of general wellbeing in the cases from zero to 10 (worst to best). It was found that the oldest-old (aged 85) prefer to focus on remaining functionally independent, whilst younger-older adults (aged 65) prefer to focus on reducing comorbidity (Hofman et al., 2015). However, these valuations were constructed through models created from the responses to the vignettes; not the responses themselves. Furthermore, neither this study nor Jaworski et al., 2017 focused on expectations in relation to musculoskeletal pain specifically.

2.6.3 During the consultation

As a consultation is a shared experience between the clinician and patient, it is essential to address dynamics that may affect the consultation experience. Throughout the literature there are a number of factors that older adults reported as influencing whether a consultation was perceived as positive. Some older adults discussed that there was importance in receiving a diagnosis, as this provided validation that they were in pain and that ‘something was wrong’ (Clarke et al., 2014). However, the majority of positive experiences came from the affective relationship between older adults and clinicians. Indeed, Marcinowicz, Pawlikowska & Oleszczyk (2014) reported that in qualitative interviews there were twice as many comments from older adults relating to GPs’ affective performance than task performance. Task performance refers to factors such as the GPs giving information, asking questions, taking action (e.g. referring for a blood test) and medical or technical competence in the consultation. Affective performance on the other hand refers to socio-emotional behaviour: body language, understanding, support, friendliness and having enough time in the consultation. This was important to ‘partnership-building’; a sense that decisions were made by both the older adult and clinician, rather than being led by the clinician. Older adults who experienced good affective performance reported being satisfied with consultations. This was reinforced by a European-wide study by Bastiaens et al. (2007), which reported that adults aged over 70 wanted to be involved in consultations regarding their health, but this focused more on the ‘caring relationship’ that the clinician displays and ‘receiving information’ than ‘active participation in decision making’ (Bastiaens, Van Royen, Pavlic, Raposo & Baker, 2007).

However, dissonance between older adults and clinicians was also reported in a number of studies. Data from a systematic review of healthcare professionals’ barriers and enablers to osteoarthritis management suggests that GPs are challenged when patient expectations do not align with their own preferences (Egerton, Diamond,

Buchbinder, Bennell & Slade, 2017). Examples were given in terms of patients insisting on being prescribed anti-inflammatory medication, regardless of its appropriateness in managing their condition; and using examples of family members' consultation experiences in forming their expectations of treatments. This has been further explored in studies that investigated both patients' and clinicians' views of consultations and management. When interviewed to explore views of knee osteoarthritis and its management, there were a number of differences between patients and clinicians (GPs, rheumatologists and orthopaedic surgeons) (Alami et al., 2011). Patients often reported that the clinician paid more attention to their knee rather than themselves as an individual and that not enough time is spent on giving information and counselling. Negative perceptions were also reported regarding medication and beliefs that treatments were ineffective in managing the condition. However, clinicians discussed the complexity in explaining treatment decision making, especially in relation to the types of analgesia offered; and viewed older patients being resigned to having osteoarthritis, with few expectations from the consultation. Dissonance was also observed in a second study investigating arthritis in primary care through video recorded consultations and interviews with GPs and patients (all but one aged over 60) in which the consultation recording was used as a prompt (Paskins, Sanders, Croft & Hassell, 2015). Often, unclear communication was observed regarding expectations of the consultation; for example, GPs sometimes offered generic reassurance when patients desired clear diagnostic information, which led to patients feeling that their concerns were not validated. This was especially prevalent in regard to patients wanting information about diagnosis, self-management and prognosis; however, unless the patient specified this, GPs tended to discuss future steps, such as clinical treatment decisions. This mismatch of approaches can consequentially leave both clinicians and patients feeling unsatisfied and frustrated.

A further factor to consider, given the importance of communication in the consultation, is the language that clinicians use. To explore this further, a UK study of six focus groups and six interviews with patients with osteoarthritis was conducted with the aim of determining patient knowledge and understanding of clinical terms in relation to arthritis (Barker, Reid & Lowe, 2013). Whilst terms specifically relating to their condition such as 'arthritis' and 'inflammation' were familiar to most older adults, terms such as 'rehabilitation' and 'self-management' were poorly understood, producing a negative emotional impact. This emphasizes the importance of taking an older adult's health literacy into account in a consultation, and that clinicians should not assume that older adults are familiar with such terms. This is especially important for older adults whose first language is not English. A Malaysian focus group study investigating older adults' knowledge of knee osteoarthritis reported that one participant did not know the actual meaning of 'osteoarthritis', and a further two participants were unaware of the development of arthritis (Kamsan, Singh, Tan & Kumar, 2020). These communication issues are likely to result in confusion and dissatisfaction for both parties in the treatment decisions, subsequent disengagement in treatments such as self-management, and poorer overall outcomes.

2.7 Treatment options

There are many different potential treatment options for older adults with musculoskeletal pain. The options included in the stratified care approach were discussed in Chapter One (1.11.3). However, the views and experiences in relation to these treatments were not explored. This section will not discuss the efficacy of such management options, but rather the perceptions of them by both older adults and healthcare professionals.

2.7.1 Self-management and coping

Older adults tend to advocate self-management strategies for treating and living with musculoskeletal pain and have more than one strategy that they perceive as being effective in managing their pain (Barry, Gill, Kerns & Reid, 2005; Lansbury, 2000). However, there are mixed reports as to which strategies are preferred. One study reported that the most common strategies to reduce pain were using analgesics (mainly paracetamol), restricting activity, use of hot or cold modalities and exercise (Barry, Gill, Kerns & Reid, 2005). In comparison, a second study found that older adults reported that their least preferred coping strategies were medication, physiotherapy and exercise; favouring distraction, heat and massage as ways to cope with chronic pain (Lansbury, 2000). These differences may be a result of the language used in the aim and research questions of these studies. Barry et al., (2005) investigated strategies to reduce pain specifically, whilst Lansbury (2000) explored preferred coping strategies. Therefore, whilst using painkillers may be an effective pain-reduction strategy, it may not be a preferred coping strategy to use. It is also important to note that the landscape of treatments available through primary care have evolved since these studies were conducted; physiotherapy and exercise may be more common and acceptable options now.

Indeed, recent studies have continued to explore how older adults use and understand self-management for osteoarthritis. Malaysian older adults with knee osteoarthritis participating in focus groups discussed their preference to use alternative therapies (such as salt, herbs and oils) recommended by family and friends, or physiotherapy to manage their condition rather than medication (Samran, Singh, Tan & Kumar, 2020). To improve their self-management, participants desired more information about knee osteoarthritis itself, pain management strategies they could perform themselves, and losing weight and exercising; demonstrating their preference for self-management as

identified in the Australian (Lansbury, 2000) and American (Barry et al., 2005) studies above.

An older adult's ability to effectively self-manage and cope with pain is intrinsically linked to health literacy; a person's capacity to understand information and make decisions regarding their health (Berry, 2016). A mixed methods study investigating self-management and health literacy for African American older adults explored this relationship (Booker, Herr & Tripp-Reimer, 2019). Regardless of health literacy levels, all older adults reported engaging in active self-management strategies; favouring over the counter topical medications, heat/cold (e.g. a warm bath), exercise, over the counter and NSAID medications, spiritual practices (e.g. prayer) and prescribed medications. Importantly, these strategies were easy to access and use, and inexpensive. There was no significant difference in the number of self-management strategies used between participants with higher or lower health literacy; although the authors concluded that this was a primarily health literate sample, reflecting the difficulties in recruiting representative samples in health research.

In all studies, older adults preferred to use strategies that were familiar to them and that could be self-administered. Barriers to engaging in management options across studies included cost, access to care, a lack of information and understanding, and crucially the desire to maintain independence. Older adults often reported feeling as though engaging with the healthcare system would remove their independence (Lansbury, 2000).

In addition to practical strategies to manage pain, psychological coping strategies are essential to older adults' management of musculoskeletal pain. A meta-synthesis of qualitative studies synthesized multiple meta-themes in relation to older adults' coping styles whilst experiencing pain (Crowe, Gillon, Jordan & McCall, 2017). The first theme

discusses older adults' perceptions of living with pain as 'adjusting to the inevitable'; viewing pain as an inevitable experience associated with ageing and frailty. Adaptation to living with pain tended to come from controlling movement that causes pain and finding different ways to achieve goals. In this sense, behaviour is deliberately chosen in order to accommodate the impact that pain may have upon daily life, and older adults are continuously finding new ways to achieve the value of their goals (Gillsjö, Schwartz-Barcott, Bergh & Dahlgreen, 2012). Gillsjö et al., (2012) also identified three other ways of coping than adjusting: ignore, struggle and resign. Participants who 'ignored' the pain deliberately chose not to acknowledge the pain in their lives, focusing instead on things that brought happiness. Those who 'struggled' resisted making adjustments to their daily lives as a result of their pain, but also found the situation to be unacceptable. Finally, the participant who 'resigned' themselves to the pain reported that their only goal every day was to get through the day, often through passive coping strategies such as sleeping and taking medication, as they felt that they could no longer do anything for themselves. This shows the variation in the coping strategies that older adults engage in in relation to their pain, and the subsequent effect of these upon emotion and daily life. However, characteristics of these separate coping strategies can also overlap. In a study where all participants felt that they had to endure their pain – that it could not be controlled or managed – properties of each of these coping styles were identified (Gillsjö, Schwartz-Barcott & Bergh, 2013). Specifically, older adults coped by taking the pain one day at a time; balancing pain with activity, thoughts and emotions; self-talking; trying to minimise their burden upon family members; and valuing moments of pleasure. This illustrates that whilst older adults may have some maladaptive cognitions in relation to their pain (feeling that the pain is out of control), these can be balanced through constructive coping strategies (identifying happy emotions).

Crowe et al., (2017) also highlighted the importance of support from others for older adults managing musculoskeletal pain, particularly in developing confidence in day to day life. Social support is an effective way to help older adults to cope with chronic pain; both in receiving social support from family, friends and health professionals and providing social support to others, for example, through volunteering (Sofaer-Bennett et al., 2007). Specifically, engaging in social activities led to older adults having a higher positive outlook despite experiencing pain. The positive impact of social support for older adults with musculoskeletal pain was addressed in Chapter One (1.4.3). This is an important factor to recognise, as older adults often report that pain causes social isolation and reduction of social activities (Makris et al., 2014). Therefore, continuing with social activities despite pain is crucial in preventing decline.

The studies discussed in this section use a mix of terms to describe the management of pain by older adults; 'pain reduction strategies'; 'coping'; 'enduring'; 'self-management'; and 'perseverance'. These terms encompass different perspectives on managing pain; some are inherently negative (endure), whilst others are more positive (perseverance). This may suggest that the language used when discussing management options with older adults can have important impact on the outcome of a consultation.

2.7.2 Analgesia

Perceptions of older adults towards the use of medication and analgesia to control their musculoskeletal pain have been discussed in part previously throughout in this chapter. Specifically, older adults with musculoskeletal pain often have concerns and worries about the use of analgesia to control their pain (Pouli, Das Nair, Lincoln & Walsh, 2014). These concerns revolve around feelings of losing independence and control, becoming reliant on medication and interactions with other medications (Crowe et al., 2017; Pouli et al., 2014), resulting in high levels of non-adherence to prescribed

medication (Markotic et al., 2013). This was explored in depth by Sale, Gignac & Hawker (2006), who investigated older adults' adherence to pain medication through semi-structured interviews. Older adults reported altering and lowering the doses of their pain medication themselves often, without consulting their GP. Of note, pain medication was viewed differently to medication for other health conditions; this stemmed from the way that the use of pain medication was communicated to them (take as needed), and the perception of analgesia being abused by people with substance addiction. Additionally, this may also be a method through which older adults feel that they can retain control whilst using analgesia; and links to stoic attitudes, as reports of having a high pain tolerance were common. However, older adults were keen to recommend that other family members take pain medication as often as they needed, portraying a minimisation of the impact of pain upon themselves when compared to their view towards others' experience of pain.

Multiple studies have also explored the views of primary care health care providers towards the use of analgesia for older adults with musculoskeletal pain. A meta-synthesis of qualitative studies found that polypharmacy was a common concern, and often GPs were keen to reduce the number of medications an older adult was receiving (Bokhof & Junius-Walker, 2016). Despite this, in a focus group study with primary care providers, 25 of the 26 participants reported prescribing opioids to older adults in the treatment of chronic pain (Spitz et al., 2011). Additionally, when interviewed, despite claiming that prescribing painkillers was based on an individualised assessment of patient needs, GPs' prescription of stronger analgesics such as opioids were strongly influenced by their previous experience in prescribing, and the outcomes from this (Gooberman-Hill et al., 2011). Clinical judgment was seen as the most important factor in deciding whether to prescribe opioids; however, for older adults this risks viewing the whole population as similar if GPs do reduce assessment down to age, as reported previously (Ouchida & Lachs, 2015). Barriers to prescribing opioids were reported as

fear of causing harm, lack of education and difficulty in switching between opioids; and GPs were more comfortable prescribing opioids in palliative settings (Spitz et al., 2011).

2.7.3 Physical activity and exercise

Physical activity is one of the most effective treatment recommendations for musculoskeletal pain (NICE, 2016). There is a complex interplay of biopsychosocial factors that contribute to the uptake and engagement in physical activity for older adults with musculoskeletal pain. Across studies, identified facilitators to engaging in physical activity include having the physical capacity and ability; framing physical activity as a way to provide relief from pain symptoms and protect mobility; older adults having a 'keep going' attitude; having social support and support from healthcare professionals; and being able to adapt and adjust physical activity (Wilcox et al., 2006; Hendry et al., 2006; Kanavaki et al., 2017). Similar to the perceptions of using medication, central themes important to older adults are maintaining independence and control. A powerful facilitator of initial uptake of physical activity is the rapport and relationship with a healthcare professional. When interviewed, older adults with osteoarthritis reported that initial adherence to exercise was facilitated by the positive relationship with the physiotherapist and subsequently not wanting to let them down (Campbell et al., 2001). Particularly, a positive attitude to exercise by both the physiotherapist and older adults meant that exercise was more likely to be incorporated into everyday life. However, continued adherence to exercise decreased by the three month follow up; some participants found it difficult to continue with exercise without the support and relationship of the physiotherapist for motivation (Campbell et al., 2001). Expanding on this, a systematic review of qualitative studies examining barriers and facilitators to physical activity in people with knee or hip osteoarthritis found that patients who had more severe pain intensity and loss of mobility were more likely to continue with the exercises; potentially as improvements in

these factors were easier to identify, aligning with the framing of exercise as providing relief (Kanavaki et al., 2017). Clearly, it is important that the way that physical activity and exercise are communicated to older adults with musculoskeletal pain is an essential component of motivation and uptake. Therefore, identifying different ways in which older adults can engage in physical activity and exercise is important. Through qualitative interviews, Moore, Richardson, Sim, Bernard & Jordan (2014) identified three styles of incorporating exercise into older adults' lives. Of the 60 participants, 12 were aged 80 or over, providing insight into the views of the oldest-old. Some older adults deliberately engaged in exercise, consciously aware of being active in order to protect or respond to pain, whilst others had a natural engagement, having been involved with sports and exercise previously in their lives. Participants also reported strategically exercising – finding ways of doing their everyday tasks but intentionally incorporating movement such as doing household chores over multiple days and resting between walks. This shows that keeping active and engaging in physical activity and exercise does not have to be structured as such, and can alternatively be found in day to day activities. This may be more acceptable for older adults who view themselves as unable to 'exercise' or join a gym. This is particularly important in multiple of the studies discussed above, often older adults view activity restriction as a natural part of ageing, described by some as 'slowing down', especially if pain is experienced when physical activity is undertaken (Mackichan, Adamson & Gooberman-Hill, 2013; Moore et al., 2014). This conceptualisation of physical activity as part of everyday context is key to older adults feeling that they are living well (Richardson, Moore, Bernard, Jordan & Sim, 2015), therefore having a positive impact not only on pain symptoms, but also the psychosocial impact of pain.

Social support was reported by older adults to be important in engaging in exercise; both from family and healthcare professionals. In one study, a GP referral scheme to local gyms was highlighted by older adults as an effective way to encourage

exercising, as this was perceived as validation and support from the GP and gave social support for those exercising for the first time (Hendry et al., 2006). However, for some older adults, attending the gym may be an unhelpful way to begin exercising, as negative social comparisons with other people exercising may be drawn (Kanavaki et al., 2017).

A number of other barriers to physical activity and exercise have been reported. One barrier discussed previously relates back to older adults' perceptions of pain; if their pain is perceived as inevitable then there was a resignation to living with arthritis then no benefit could be seen from engaging in physical activity or exercise (Campbell et al., 2001; Kanavaki et al., 2017). Other barriers include older adults feeling as though they were not knowledgeable enough regarding the benefits of physical activity and its role in pain management, especially when activity or exercising can often be believed to be damaging to conditions such as osteoarthritis (Jancey, Clarke, Howat, Maycoc & Lee, 2009; Wilcox et al., 2006). This is despite older adults reporting that they believed that physical activity did provide health benefits for them (Jancey et al., 2009).

Therefore, there is a role for GPs and physiotherapists to be able to provide more guidance, information and reassurance regarding physical activity to older adults in a consultation, in order to facilitate engagement.

2.7.4 Psychological interventions

Psychological interventions such as cognitive-behavioural therapy (CBT), mindfulness and relaxation are recommended for adults experiencing chronic pain (NICE, 2016).

However, there is very limited literature examining older adults' or clinicians' experiences of psychological interventions for pain, rather evidence tends to report the efficacy of such management options.

One study found that older adults reported that mindfulness meditation substantially reduced the experience of pain; mindfulness facilitated distraction from pain through clear focus on other activities, a heightened awareness to pain sensations in the body leading to behaviour change and better ability to cope with pain (Morone, Lynch, Greco, Tindle & Weiner, 2008). A couple of studies have investigated physical therapists' experience of using CBT with older adults with pain. One study found that whilst some cognitive-behavioural techniques were utilised (activity pacing and scheduling pleasurable activities), overall only a minority of clinicians used cognitive-behavioural therapy techniques with older adults (Beissner et al., 2009). Barriers in the use of CBT with older adults focused on a lack of knowledge, especially for the complexities such as comorbidity associated with older adults, and time constraints in the consultation. In the second study, conducted as part of a randomised controlled trial for physical therapy delivered CBT, physiotherapists reported that utilising CBT techniques altered their usual practice, but they were able to feel confident in delivering CBT, especially when access to a psychologist was available for feedback for the first few months (Nielsen, Keefe, Bennell & Jull, 2014).

2.8 Summary

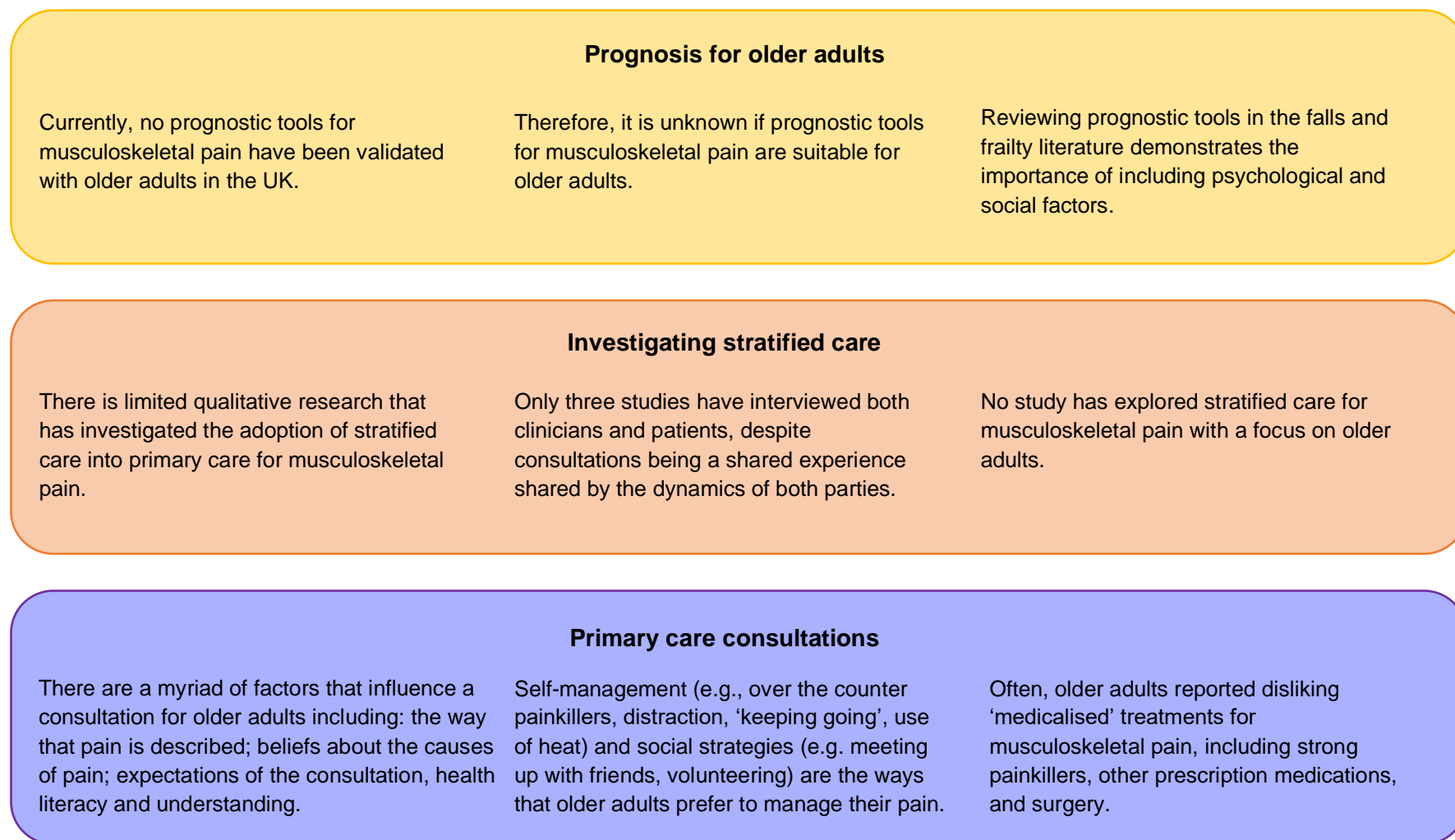
Figure 2.3 summarises the research discussed in this literature review in relation to prognosis, stratified care and primary care consultations for older adults with musculoskeletal pain.

2.9 Implications and gaps in the literature

There are a number of gaps in the literature arising from this review:

- Prognostic tools for musculoskeletal pain have not been validated in older adults in the UK, despite prognostic factors potentially differing for older adults
- There is no qualitative literature specifically investigating stratified care for older adults

Figure 2.2: Summary of literature review



- Despite GP consultations being shared experiences, very little research includes both clinician and older adult views
- There are a multitude of factors associated with the experience and dynamics of a primary care consultation for musculoskeletal pain with older adults; yet it is unknown whether stratified care affects these factors or is even suitable for older adults
- Clinician views on the treatment options for older adults with musculoskeletal pain are rarely sought
- There is very little research on experiences of psychological interventions for pain for older adults

This thesis therefore, seeks to address these gaps to generate novel insights about the experience and management of pain in older adults, and the suitability and usefulness of stratified care for this population.

2.10 Aim and research questions

The aim of this thesis is to investigate the use of stratified care for older adults with musculoskeletal pain. A number of research questions have been developed based upon the existing literature to explore this aim:

1. Are the clinical profiles of patients with musculoskeletal pain stratified into low, medium and high risk subgroups different between older and younger cohorts?
2. Does the STarT MSK Tool have equal discriminant and predictive validity across ages?
3. What are older adults' and clinicians' experiences of factors that contribute to complexity in musculoskeletal pain?

4. What do older adults and clinicians see as constituting a good GP consultation for musculoskeletal pain for older people, and what are considered acceptable outcomes?

Chapter Three: Methodology and methods

3.1 Chapter introduction and context

This chapter presents the methodology and methods of the thesis, detailing how the aim was addressed and research questions answered. The aim of this chapter is to present the context in which the study design, data collection and analysis took place, how data collection and analysis answered the research questions, and how this led iteratively from one method to another. As such, this chapter presents the philosophical stance and study design, the mixed methods approach, and in-depth details regarding the quantitative and qualitative data collection and analysis methods used.

3.2 Philosophical underpinnings

Identifying the philosophical underpinning is the first step in the research process. There are two concepts that underpin philosophical positions in research: ontology and epistemology. Ontology refers to the nature of reality; whether there is an objective reality or if reality is only 'the product of one's mind' (Burrell & Morgan, 1979). This ranges from realism (the belief that there is an objective reality outside of human interpretation) to subjectivism (the belief that reality is created through the human mind and subsequent social constructions) (Holden & Lynch, 2004). Epistemology refers to the question of how knowledge can be gained. The continuum of epistemology ranges from objectivism to constructionism. Objectivism is the view that knowledge can be discovered, and that causality can be obtained. Conversely, constructionism views knowledge as context specific, and that every person generates their own knowledge based upon their understanding of the world and life experiences (Moon & Blackman, 2014).

The ontological and epistemological positions taken by researchers then inform the research methods, and how the research questions and objectives are investigated.

Research using a realist ontology will often take an experimental or explanatory approach, and therefore, depending on the research aims and objectives, may use study designs such as randomised controlled trials, cohort studies, systematic reviews and cross-sectional studies; whereas a subjectivist ontology is more commonly linked to exploratory approaches, which may employ qualitative methods such as in-depth interviews, focus groups and observation (Holden & Lynch, 2004). It is important to note that there are numerous philosophical stances along these continuums which represent 'softer' or more nuanced positions that combine elements of both realism and constructivism. The two extremes of these continuums were discussed here principally to aid clarity and understanding.

3.2.1 Pragmatism

The philosophical approach in this thesis is pragmatism. Pragmatism is removed from asking questions about reality (Creswell, 2014), rather, accepting 'philosophically, that there are singular and multiple realities that are open to empirical inquiry and orients itself toward solving practical problems in the "real world"' (Feilzer, 2010), therefore positioning itself outside of the ontological continuum discussed above. However, the pragmatic approach does acknowledge epistemology, accepting that there are multiple methods through which knowledge can be gained, and focuses on connecting these to the methodology and methods selected (Morgan, 2007). Methodology is the central factor in this approach, both influencing and being influenced by epistemology and methods.

Research in health is becoming increasingly pragmatic in nature, choosing the best means to answer a research question and therefore design effective interventions. This approach assumes that 'no method is intrinsically better than another, though certain methods may be better than others in relation to particular interests' (Cornish & Gillespie, 2009). The appropriateness of the research method to answering the

research question is key in pragmatism, acknowledging that in differing contexts ethnography is as appropriate, or sometimes more so, than a randomised controlled trial, for example (Cornish & Gillespie, 2009; Feilzer, 2010). Although the flexibility in the methodological approach and non-committal nature of epistemology is often regarded as a benefit of pragmatism, criticisms of the approach often brand it as utilitarian and reductionist (Cornish & Gillespie, 2009), focusing too much on outcomes and dismissing the reflection of different realities. However, the pragmatic approach does not idealise objectivity or the removal of the researcher from the view of reality and knowledge. Indeed, the researcher's worldview is at the core of pragmatism. For example, it is the researcher who decides which methodology is most appropriate, and which research questions are the most important (Morgan, 2007). These, therefore, are based upon the researcher's political, social, cultural and personal context. The pragmatic researcher is similarly able to maintain both subjectivity in their own reflections on research and objectivity in data collection and analysis (Shannon-Baker, 2016).

The inclusion of subjectivity in pragmatism is also seen in the questions it explores. For example, even within trial methodology it is still important to identify and explore the contexts, views, experiences, understanding and behaviours of those involved (for example, patients, clinicians and policy makers). Pragmatism can be flexibly applied. One strand of pragmatism is borne out of experience; when a problem is experienced a pragmatic approach looks to solve these problems, acknowledging the impact of problems at multiple levels: upon individuals, communities, health care systems, society and culture (Cornish & Gillespie, 2009). Furthermore, pragmatism accepts that in developing solutions to problems it is important to acknowledge and identify the causes of the problem. Additionally, 'pragmatism can be used to determine meaning, focusing on shared meaning-making and communication to create practical solutions to social problems' (Shannon-Baker, 2016). Therefore, pragmatism both includes the

subjective context in which the research is nested, but uses this in order to provide effective, practical answers to the research aims.

3.2.2 Pragmatism and this study

This thesis adopts a pragmatic approach in multiple ways. The aim of this study – to investigate the use of stratified care for older adults with musculoskeletal pain – is addressed through both quantitative and qualitative methods as appropriate. Stratified care aims to address the ‘real life’ issue of improving care for people with musculoskeletal pain. As there are differences in the way that older adults perceive and experience pain, it is essential to evaluate the effectiveness of stratified care in this population. Therefore, it is important to establish the contexts of older adults presenting to primary care; their clinical profiles; how age impacts the complexity of older adults presenting to primary care; how effective the STarT MSK tool is; their experiences of the General Practitioner (GP) consultation itself; and their views on the management options. Furthermore, the success of interventions in healthcare often depends ‘not only on the evidence base of the intervention, but also upon the acceptability to patients and healthcare workers/clinicians’ (Campbell, 2004; Cornish & Ghosh, 2007; Cornish & Gillespie, 2009). Therefore, as this thesis includes quantitative methods to establish the evidence in relation to a clinical tool, in addition to qualitative methods exploring the views and experiences of clinicians and patients, these findings can address the acceptability, suitability and effectiveness of stratified care for this population.

Furthermore, my own subjectivity as the researcher is taken into account in the design of the research reported in this thesis. Based upon my personal experience, my training in and experience of health psychology, and the review of the literature, I take the position that pain can be both an objective and subjective experience. Specifically, I subscribe to the belief that whilst pain is a physical sensation produced by the body, a

person's pain experience is created through their subjective understanding and life experiences. I accept that there are multiple sources of investigating and gaining knowledge about pain and therefore seek to explore this using a mixed methods design.

Randomised controlled trials can also be pragmatic, as was the STarT MSK trial. Pragmatic clinical trials 'measure effectiveness; the measure of the beneficial effect of the intervention in real clinical practice' (Godwin et al., 2003), an aspect crucial to health care services research. Applicability is key for pragmatic clinical trials; research is conducted in as close to 'real life' conditions as possible. This follows the pragmatic approach of aiming to find solutions to 'real life' problems. Rather than employing stringent inclusion and exclusion criteria, participants are representative of the intended population and therefore may have differing attitudes, socio-demographics, and in relation specifically to health care research, comorbidities and polypharmacy, among a range of other factors. Importantly, pragmatic clinical trials demonstrate the plausibility of the proposed intervention, ensuring that it is appropriate and valid for use in clinical practice and understood by all stakeholders including patients, clinicians, executive staff, policy makers and government (Williams, Burden-Teh & Nunn, 2015). The STarT MSK trial clearly embodies these aspects of pragmatic clinical trials. The aim of the trial is to test the effectiveness of stratified care; the trial was embedded within the primary care medical record system, with GPs delivering the intervention during routine clinics; patients who were consulting for musculoskeletal conditions were then recruited into the trial and there were no exclusions based upon age, sex, ethnicity, medical history, comorbidities or medication use, thereby reflecting the intended population. Furthermore, the STarT MSK trial aims to inform clinical decision making and subsequently change a range of GP behaviours (Hill et al., 2020b).

3.3 Mixed methods

Despite an increase in the use of mixed methods research, there is no consensus upon a definition. In an analysis of 19 definitions given by leading mixed-methods researchers, Johnson, Onwuegbuzie & Turner (2007), proposed a definition of mixed methods research as combining 'elements of qualitative and quantitative research approaches for the broad purposes of breadth and depth of understanding and corroboration'. Mixed methods research provides this breadth and depth of understanding and corroboration in many ways, including through providing better understanding of the phenomenon in question; enhancing description and richness; and providing validation of findings from a triangulation of approaches (Johnson, Onwuegbuzie & Turner, 2007). This highlights a main benefit of using mixed methods designs; by integrating both qualitative and quantitative research methods in a single study, this incorporates the strengths of both approaches whilst minimising the weaknesses. Mixed methods designs are particularly suited to use in health services research, as health is a multifaceted and complex phenomenon, and therefore requires multiple approaches for the various elements to be fully explored. Particularly, mixed methods designs have been advocated for use in primary care research, and in the assessment of treatment integrity and fidelity (Collins, Onwuegbuzie & Sutton, 2006; Creswell, Fetters & Ivankova, 2004).

3.3.1 Mixed methods and pragmatism

Mixed methods research often has a pragmatic approach as it presents a way to generate knowledge through consideration of multiple viewpoints, perspectives and positions (Johnson, Onwuegbuzie & Turner, 2007). This aligns with the pragmatic approach, which endorses the epistemology that knowledge can be gained through multiple methods, and that no one research method is intrinsically better than another. Often, it may be that the best understanding of a problem is to combine multiple research methods (Johnson & Onwuegbuzie, 2004). Furthermore, pragmatism

enhances shared meaning – and combining quantitative and qualitative methods allows the advantages and disadvantages of both to be complemented (Shannon-Baker, 2016).

3.3.2 Mixed methods design

To utilise a mixed methods approach effectively, it is important to carefully consider the role of each method when designing the study. A mixed methods approach was decided upon for this study as it allowed the aim to be fully addressed, and each individual research question to be explored appropriately. As driven by the pragmatic approach, the research problem and questions informed the design and data collection approaches used. An exploratory research approach was taken within this thesis. Sim & Wright (2000) detail the three types of research approaches that can be used:

- Exploratory approach: utilises broad research questions, in order to explore a field that is as yet poorly understood
- Descriptive approach: research questions provide a descriptive account of a known phenomenon, often used to develop a theory of body of knowledge in more detail
- Explanatory approach: utilises specific questions, which are often testable hypotheses, to investigate a known field with lots of previous research. These hypotheses take the form of a statement to be proven or disproven, rather than a research question

An exploratory approach is the most appropriate for this thesis as the literature review identified that the field of stratified care for older adults with musculoskeletal pain is under-researched. Additionally, as discussed previously, pain is a multi-dimensional concept benefiting from objective (i.e. STarT MSK tool validity) and subjective (i.e.

perceptions and experiences) exploration. Combining these approaches in an exploratory and pragmatic way ensures both breadth and depth in the study.

There are many factors to be considered when deciding upon a mixed methods design, including whether it is fixed (pre-determined design) or emergent (one approach subsequently added); matching the design to the research questions; the level of interaction between the quantitative and qualitative strands; priority of strands; timing, and the ultimate mixing of strands (Creswell & Plano-Clark, 2011). There are a number of different ways that mixed methods research can be undertaken. Creswell (2003) proposed six main mixed methods designs, as displayed in Table 3.1. These six designs mainly differ on whether data collection for the qualitative and quantitative strands were collected simultaneously or one after another, and whether there is a theoretical perspective guiding the decision and development of the research process.

Table 3.1: Six main mixed methods designs (adapted from Creswell, 2003).

Design Type	Implementation	Purpose
Sequential explanatory	Quantitative followed by qualitative	To use qualitative results to add to and assist in the explanation and interpretation of the findings of the quantitative strand
Sequential exploratory	Qualitative followed by quantitative	To use quantitative results to assist in the interpretation of qualitative findings, primarily to explore a phenomenon or test an instrument
Sequential transformative	Quantitative followed by qualitative OR qualitative followed by quantitative	The use of a theoretical framework guides the study, allowing the research to employ the methods best served to follow the theoretical perspective
Concurrent triangulation	Concurrent collection of quantitative and qualitative	To cross-validate or corroborate findings within a single study
Concurrent nested	Concurrent collection of quantitative and qualitative	There is a predominant method that drives the study, and the other method is nested within that method. The embedded method can explore different research questions than that of the predominant method, and allow researchers to gain broader perspectives
Concurrent transformative	Concurrent collection of quantitative and qualitative	Guided by the use of a theoretical perspective which is the driving force behind all methodological considerations. This design allows the facilitation of the theoretical perspective

As the quantitative strand was available to inform the development of the qualitative strand, concurrent and sequential exploratory designs were not chosen, as these would not allow the quantitative data to be analysed before conducting the qualitative strand. Particularly, it was felt that in a sequential exploratory design, the ability of the quantitative strand to add to the qualitative findings would be restricted in this thesis' context. A sequential transformative approach was not applicable as a theoretical framework was not utilised; using a framework would have introduced a deductive component into an otherwise exploratory study. Therefore, this study utilised a fixed sequential explanatory design, in which quantitative strands of research were completed before beginning the qualitative strands.

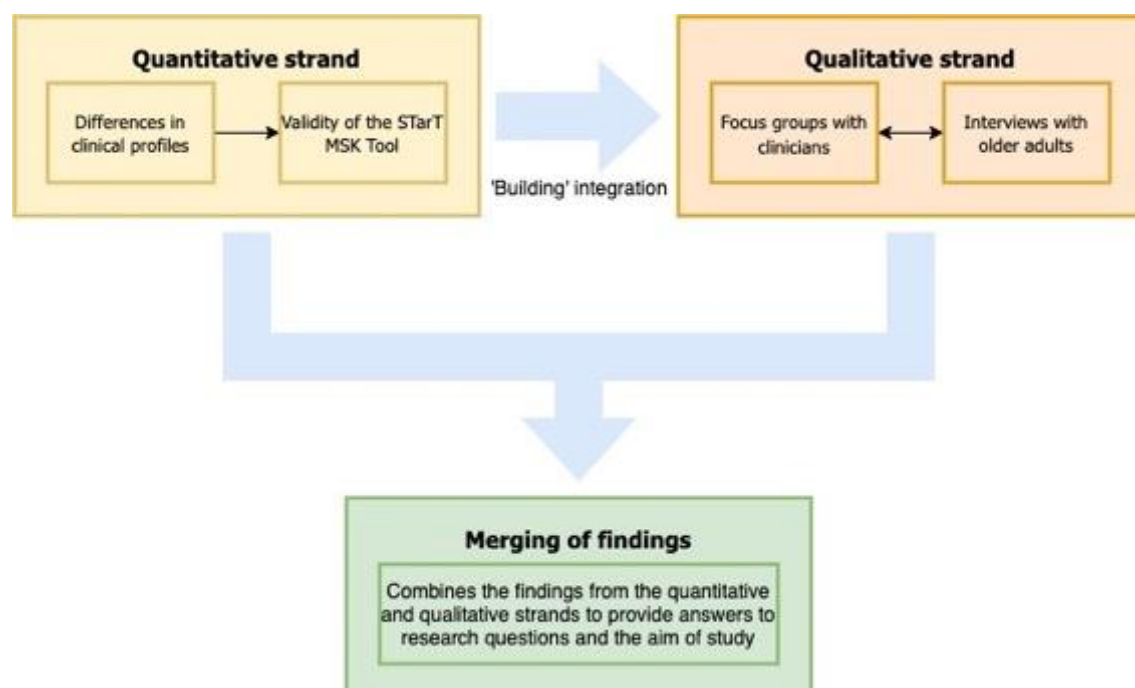
These strands were independent of each other, as the quantitative and qualitative addressed separate research questions. In studies using a sequential mixed methods design, integration between the quantitative and qualitative strands occurs twice (Ivankova, Creswell & Stick, 2006). In this study, integration occurred at the methods level through 'building' (one database informing the data collection of the other), and at the conclusion through 'merging' (bringing the two databases together for overall analysis) (Fetters, Curry & Creswell, 2013). 'Building' occurred in the intermediate stage of the study, where the quantitative research had concluded but before the qualitative research began. Quantitative findings informed the design of the qualitative strand in several ways:

1. The exploration of the clinical profiles of participants by narrow age categories highlighted some important differences between 'younger'-older adults and the 'oldest-old'. This therefore led to the aim to purposefully sample across age categories for the qualitative strand of the study.

2. The development of the qualitative topic guides for clinicians and older adults was influenced by the results from the first two research questions; specifically questions regarding mental health and social factors were explored.
3. Testing of the STarT MSK Tool quantitatively led to exploring face validity of the tool with older adults in the interviews, to add further context to the quantitative results.

An overview of how the sequential mixed methods design was utilised in this study is given below in Figure 3.1. In the quantitative strand, the findings from the first research question informed the purpose of the second research question. Together, these findings shaped the design of the qualitative strand; in which the focus groups and interviews iteratively informed each other. Findings from the qualitative and quantitative strand were then merged to answer the aim of the study, presented in the discussion.

Figure 3.1: Mixed methods design of the thesis



Whilst integrating each method is integral, it is also important to retain the distinctive and separate standard operations of both quantitative and qualitative research methods. Therefore, this thesis will generally use the standard reporting structure of each method; quantitative chapters will report both methods and results, whilst the qualitative chapters will present only results (the methods will be discussed later in this chapter, see 3.5). The discussion chapter will then integrate the findings from both methods.

3.4 Quantitative methods

Quantitative research methods were selected to investigate the following research questions:

- ⇒ Are the clinical profiles of patients with musculoskeletal pain stratified into low, medium and high risk subgroups different between older and younger cohorts?
- ⇒ Does the STarT MSK Tool have equal discriminant and predictive validity across ages?

Both of these research questions were investigated using secondary analysis of data collected in workpackages 1 (Keele Aches and Pains Study; KAPS) and 3 (Treatment for Aches and Pains Study, (TAPS); STarT MSK pilot trial) of the STarT MSK programme. Secondary analysis is the re-analysis of previously collected data for the purpose of investigating new research questions (Johnston, 2017; Payne & Payne, 2004). Secondary data analysis allows researchers to maximise the use of datasets, whilst generating new knowledge, hypotheses and research questions (Cheng & Phillips, 2014; Heaton, 1998). Additionally, if a certain population is of interest, this allows further exploration and investigations to be undertaken, and comparisons to be drawn within the same context, without approaching and collecting data from this population again. However, there are limitations of using secondary data analysis, primarily the lack of control over the type of data collected and the methods used, as

well as new researchers being unaware of data collection decisions and processes relevant to the initial research (Cheng & Phillips, 2014).

This study used secondary analysis as it reflects the nesting of the PhD in the context of the STarT MSK programme; by using data from earlier workpackages this ensured that findings were representative of the programme. This is particularly important as the qualitative strand of the study recruited patients from the main STarT MSK trial, and therefore it was important that these two datasets were complementary. Both the KAPS and TAPS pilot datasets contained patient data, as members of the public who had consulted their GP for a musculoskeletal condition completed questionnaires over a six-month period in relation to their pain. A detailed overview of the datasets, variables selected, and the analyses used to investigate each research question are given in chapters four and five, respectively.

3.5 Qualitative methods

Qualitative methods were used to investigate the following research questions:

- ⇒ What are older adults' and clinician's experiences of factors that contribute to complexity in musculoskeletal pain?
- ⇒ What do older adults and clinicians see as constituting a good GP consultation for musculoskeletal pain for older people, and what are considered acceptable outcomes?

This qualitative component received ethical approval from East Midlands – Nottingham 1 Research Ethics Committee (Research Ethics Committee Reference Number: 16/EM/0257; Appendix 1).

3.5.1 Qualitative approach

Qualitative approaches provide substantial insight into the lived experience of musculoskeletal pain and are therefore recommended in its investigation (Ong & Richardson, 2006). An inductive approach to the qualitative research process was undertaken in line with the study's exploratory approach. Whilst I had knowledge of the previous literature, I did not anticipate or search specifically for any particular themes before beginning analysis; rather the development of codes and themes was principally grounded in the data itself and through comparisons between the data sets (Braun & Clarke, 2006).

3.5.2 Qualitative methods

This study used both interviews and focus groups to gain an insight into both patients' and clinicians' views and experiences of complexity and care for older adults with musculoskeletal pain. Different methods were used due to the context, ethical considerations (such as discussing personal experiences), and feasibility of accessing the different populations, whilst answering both research questions. Face-to-face interviews were deemed to be the most appropriate method for older adults to explore their individual views and experiences of their health, management of musculoskeletal pain and the consultation in which stratified care was used. In comparison, focus groups were used for clinicians to be able to explore the culture of each GP practice, gaining an insight into how both individual clinicians and practices view consultations for older adults with musculoskeletal pain.

The advantages and disadvantages of using interviews and focus groups with these populations are discussed below. Gaining both patient and clinician views on these topics was integral to addressing the aim of this study. A GP consultation is a shared experience; however, there may be differing interests, beliefs and priorities between patients and clinicians (Bergman, Matthias, Coffing & Krebs, 2013). Yet much research

lacks the perspective from both groups. In this study, despite the different methods used, the topic guide for both interviews and focus groups reflected the same three main topics (which in turn reflect the two research questions): complexity in older adults, how to achieve good GP consultations and the management of musculoskeletal pain in older adults. Therefore, interview and focus group data were collected concurrently and integrated to iteratively develop the topic guides; information gained from patient interviews could be posed to clinicians and vice versa.

3.5.3 Sampling

3.5.3.1 Interviews

Purposeful sampling is often used in qualitative research, and involves the researcher intentionally choosing participants based on the qualities and characteristics that they possess (Tongco, 2007). There are many variations of purposeful sampling dependent upon the aims of the research; in this study I used stratified purposeful sampling.

Stratified purposeful sampling groups participants into different strata, and then aims to capture major variations across strata (Palinkas et al., 2015). This combines typical case sampling (used to illustrate what is 'normal') and maximum variation sampling (used to gain as wide of contrast of characteristics as possible). Using stratified purposeful sampling allows the researcher to ensure that pre-determined variables of interest are included (Sandelowski, 2000). Key variables of interest were determined in this thesis by the preceding quantitative analysis.

Prior to sampling, in order to gain maximum insight into the stratified care process and experience, it was decided that it was essential that patients were in the intervention arm of the trial. The main strata of this purposeful sampling were by age category (65-74, 75-84 or 85+) and risk subgroup (low, medium or high). Secondly, gender, pain site, and geographical location were reviewed in order to gain a representative sample, as these factors were identified as the most significant factors for this study and

stratified care from previous literature and quantitative results. Further sampling factors included impact of pain on mood, comorbidities and most recent occupation, however these factors were considered of lower importance than age, gender, risk subgroup and pain site.

3.5.3.2 Focus groups

GP practices invited to take part in focus groups were recruited from different geographical and socio-economic areas in order to access views representative of the wider UK. This allowed comparisons to be made across the focus groups in terms of the management of populations with varying demographics. As the STarT MSK Trial recruited across multiple areas in the Midlands and North West of England (Warwickshire, Staffordshire, Shropshire and Cheshire), there was a selection of areas available. By recruiting only GPs and physiotherapists involved in the trial, subsequent reflections about using stratified care with older adults could be based on personal experience of using the STarT MSK tool in consultations, selecting and delivering matched treatments.

3.5.4 Recruitment

3.5.4.1 Interviews

Older adults were recruited for interviews through the intervention arm of the STarT MSK trial, as this ensured that their GP consultation for their musculoskeletal pain had included the GP completing the STarT MSK tool, and they were likely to have received one or more of the matched treatment options. On the consent form included as part of the initial study pack sent along with the baseline questionnaire, patients were asked whether they consented to be contacted for further research as part of the programme of work. If patients responded 'yes', then their details were entered into a database for sampling for the qualitative interviews. I sampled potential participants purposefully, and those sampled were sent an invitation letter (Appendix 2) and information leaflet

(Appendix 3) through the post, which I followed up with a telephone call between two and seven days after receiving the letter. On the phone, I asked patients if they wished to take part in an interview; if they agreed then the date and time for the interview was arranged over the phone and followed up with a confirmation letter by post. If they declined, then I did not contact them again. Patients were reassured that their response to the interview invitation did not affect their involvement in the main STarT MSK trial. Taking part involved an initial face-to-face interview, with an optional follow-up telephone interview. All face-to-face interviews were conducted at participants' homes by their choice, and I contacted participants the day before the arranged interview to confirm. Prior to beginning the interview, participants' written informed consent was gained (Appendix 4). Consent for the follow-up interviews was gained initially on this form, and then re-gained before arranging the telephone interview.

3.5.4.2 Focus groups

The GP practices involved in focus groups were those that had been recruited to the STarT MSK trial and randomised into the stratified care arm of the trial. The STarT MSK trial ensured that there was a direct pathway to physiotherapy services for the intervention GP practices; thus, there were allocated physiotherapists for each GP practice in the existing referral system. The focus groups were nested into trial feedback sessions, which were arranged around three months after each practice had gone 'live' in the trial; this timing allowed both GPs and physiotherapists to reflect upon their experiences of the trial so far and raise any issues with the study team. When arranging these feedback sessions, the selected GP practices and physiotherapists were asked if they were willing to take part in a focus group as part of the session. By nesting the focus groups as part of these feedback sessions this ensured that a number of GPs would be present to take part, given that these sessions were agreed upon as part of practices signing up to take part in the trial. It also provided the context

for the focus group by encouraging reflection upon stratified care and the trial before beginning the focus group.

3.5.5 Data collection

3.5.5.1 Interviews

To fully answer the research questions a two-stage interview design was undertaken. Firstly, every older adult recruited was interviewed face-to-face in their own home (by their choice). Some participants then took part in a shorter, follow-up interview a few weeks after the initial interview. These were participants who when first interviewed had not yet received or finished their matched treatments, or with whom I wished to further explore emerging themes from the initial interview. Using the two-stage design enabled me to fully explore each participant's journey through their stratified pain management; the follow-up interviews meant that older adults' experiences of care beyond the GP consultation (self-management, re-consulting, referral processes, physiotherapy, secondary care and medication) could be explored. Furthermore, having two-stage interviews enables richer data to be gathered through an iterative interview process which enabled me to check emerging themes from the first interview with the participant as a form of validation, and expand more if needed. Additionally, using follow up interviews allows both participants and researchers to reflect on and process the initial interview, which may lead to further insight into the topic (Thomson & Holland, 2010). In interventional research, it also draws participant attention to the intervention, which may not have been considered otherwise. This may produce a deeper insight into participants' experiences and perspectives of the intervention, although this must be balanced with skewing of behaviour based upon this knowledge (i.e. the possibility of the interview acting as an intervention itself).

The semi-structured nature of the interviews allowed participants' personal and social contexts and experiences to be explored; though the topic guide contained

predetermined questions, these were initially open-ended and participants were encouraged to expand upon their answers (DiCicco-Bloom & Crabtree, 2006, Appendix 5). In addition to the topic guide, I also took a paper copy of the STarT MSK Tool with me, to use as a way to 'break the ice' at the beginning of the interviews after initial introductions and backgrounds were talked through, and to gain face validity from older adults. I presented the participants with the tool (saying that their GP may have asked them these questions), and asked the same set of questions to all participants:

- 1) what they thought in general of the questions;
- 2) whether the questions were considered relevant to themselves and their pain conditions;
- 3) whether they thought that the questions were useful for GPs to ask in a consultation, and;
- 4) were there any items that they thought should be either removed or included.

I supplemented this semi-structured approach by adopting a listening approach within a person-centred stance, allowing the participants to discuss freely whatever they felt was most appropriate in the answers to research questions. Empathy, understanding and validation were key tenets of this approach, and ultimately helped to build rapport with participants, help them to feel at ease and elicit rich, spontaneous data.

The topic guide was amended iteratively, after each interview pertinent factors were noted to be explored further in future telephone interviews with the same patient, face-to-face interviews with other participants and focus groups with clinicians.

3.5.5.2 Focus groups

The purpose of focus groups is to 'capitalise upon the interaction between participants to generate data' (Kitzinger, 1995). This approach is often used in research investigating health and health care, and is particularly suited to health care professionals as it can bring together the views of a number of people together at

once, whilst also providing comparisons, contrasts and dynamics between participants that would not have been unearthed otherwise (Sim, 1998). In this thesis, as the focus groups took place within each GP practice (as opposed to across practices), the culture of the individual practice could be explored, in addition to the way that the clinicians constructed shared meanings. However, this may also have limitations as participants' views may be more homogenous within a single practice than if the participants were recruited from across practices.

Focus groups allow a more conversational approach to data to be created; the interpersonal communication between participants allows richer data to be gained (Kitzinger, 1994; Krueger, 2014), especially if the participants already know each other and are comfortable with each other's presence (Freeman, 2006). However, it is important to strike a balance between encouraging open discussion and not suppressing views that diverge from those of the group (Freeman, 2006; Kitzinger, 1995). As the focus groups occurred within a workplace context and participants ranged from junior to senior, there may have been a reluctance to display opposing viewpoints to more experienced colleagues; especially if these colleagues portray a dominant voice in the focus group (Happell, 2007; Smithson, 2000). I attempted to overcome this through inclusion of all participants; posing queries directly to one participant if they were particularly quiet or asking them to expand upon previously voiced views. Focus groups explore collective views, knowledge and experience in comparison to interviewing, which allows rich data to be sourced from an individual, facilitating exploration of their personal experiences, behaviours and views (Sim, 1998). This allows shared meanings to be constructed in the context of each focus group. However, it is important to note that 'the absence of diversity in the data from a focus group does not reliably indicate a consensus between the participants' (Sim, 1998), and focus groups should not be used to generalise attitudinal consensus of a topic. Conducting multiple focus groups however, can ensure a wide range of

viewpoints saturate the discussion of the topic, as comparisons can be made between different groups.

Of importance to the success of a focus group is the way in which the researcher presents socially. The personality, skills and attributes of the researcher can affect the dynamics, and subsequent quality of the data. Crucial to this facilitation is striking the most appropriate balance between taking an active and passive role within the focus group, in order to ensure that the interaction of the participants is encouraged and preserved (Sim, 1998, Wong, 2008). Ideally, there should be minimal intervention from the researcher, however the researcher should be engaged, and never completely passive (Kitzinger, 1994). In my approach to the focus groups, I endeavoured not to simply observe, but also to not stifle discussion, whilst being aware of potential ethical considerations (Sim & Waterfield, 2019). I reflected upon salient points and attempted to draw quieter participants into the discussion. The focus groups were held at the GP practice itself and facilitated by myself and another member of the study team. In the same style as the interviews, the topic guides used were brief (Appendix 6) and the focus groups were semi-structured in order to allow discussion to be free-flowing and created by the participants whilst remaining within the confines of the study aims.

3.5.6 Data saturation

The concept of data saturation is often debated in qualitative and social science research. One of the key tenets of qualitative research that makes it distinctive from quantitative research is that more data does not necessarily lead to more information (Mason, 2010). Rather, it is the richness; the layers, depth, intricacy and nuance of the data that is most valuable (Fusch & Ness, 2015). Given the breadth of qualitative methodological approaches, saturation is a difficult concept to define. Often, saturation is considered a 'stopping point' for data collection, rather than a fulfilment of the research questions (Saunders et al., 2018), and so it is important that there is enough

data to provide a robust answer to the research questions. One approach to data saturation is that of 'informational redundancy'; when no new information is being gained through data collection (Sandelowski, 2008). This can be assessed as when there are no new codes being generated from the data, and the codes that have been identified are well supported.

In terms of feasibility, there has been debate around whether an a priori prediction of the number of interviews or focus groups to be conducted to reach data saturation can be given (Sim, Saunders, Waterfield & Kingstone, 2018). Often funders, reviewers and ethics panels in healthcare research require an estimate of the number of interviews and focus groups that will be conducted (Mason, 2010). Although this can be difficult to pre-empt, it is important that a number is not given arbitrarily, and that enough leeway should be left so that a robust and rigorous approach can be taken to allow for sufficient saturation to be obtained. Furthermore, as long as the required information is obtained and this is reliable, there is no cap on how many informants should make up a purposeful sample (Tongco, 2007). All of these considerations were assessed when examining saturation in this study. As thematic analysis was used as the main analysis method for both the interviews and focus groups, the main concept of saturation the notion of 'no new themes identified' (see 3.6.1). This means that once no new themes were being identified in the data, and there was sufficient evidence within the existing codes to answer the research questions, data collection ceased. Therefore, within this study, saturation was defined as assessing the 'development of existing themes in addition to the non-emergence of new themes'; and this was considered a process as part of sampling, data collection, and data analysis.

Data saturation was an iterative process for both the interviews and focus groups in this study. After each interview and focus group, I completed a reflective diary sheet (see Appendix 8), assessing and summarising the main points and issues, the

information gained or missed for key topics, anything that stood out as salient or interesting, and remaining questions (Miles & Huberson, 1994). Completing this allowed both myself and my supervisors to reflect upon whether there were any new points not otherwise covered in the topic guide to be added and investigated in subsequent interviews or follow-up telephone interviews. Saturation was indicated once this was no longer apparent.

3.5.7 Ethics

3.5.7.1 Interviews

Both procedural ethics and 'ethics in practice' (Guillemin & Gillam, 2004) were considered in relation to data collection. Procedurally, a number of ethical considerations were taken into account when designing, carrying out and analysing the interviews. A thorough ethical process was undertaken to ensure that older adults participating in the qualitative interviews were fully informed, happy to take part and protected from harm. Importantly, the STarT MSK trial excluded patients who were not able to consent, therefore excluding any vulnerable older adults. For those who were included in the trial, on the consent form participants were asked whether they were happy to be contacted in relation to further research related to the STarT MSK programme. This was in the form of an optional checkbox which did not affect their involvement with the trial. Before starting the interview, in accordance with both Keele Clinical Trials Unit's Standard Operating Procedures and guidance in the qualitative research literature (DeCicco-Bloom & Crabtree, 2006), participants were informed of the audio recording of the interview; that their data will be transcribed, anonymised and kept confidential; and of their right to withdraw at any time during the interview and up to three months afterwards. This aimed to give the participant autonomy over their decision to take part and freedom to change their mind as much as possible. Additionally, participants were thanked for volunteering by being given a gift voucher after participating in the face-to-face interview.

Ethics in practice is complex; and includes considerations about how the researcher will manage disclosures of harm or participants becoming upset or distressed during the course of the data collection. In addition to the ethical standards required by ethical committees, these issues in practice require subjective decision-making by the researcher who needs to make their own judgement about the most appropriate way to respond (Guillemin & Gillam, 2004). To address potential ethical dilemmas, it is important that participants are given autonomy in the interview, both by being free to discuss topics that they consider to be most important, and by being free to withdraw data at any time. Often the power dynamics of interviews can be skewed towards the researcher being the dominant figure and therefore giving the participant autonomy can create a balance in power (Brinkmann & Kvale, 2005). As the researcher I was aware of the active part I could play to minimise harm. For example, in one interview with an older adult I became aware that the participant was quite upset after discussing their personal experience. Therefore, I asked them if they would like to pause the recording and take a break. During the break I reassured the participant that they could take as long as they wished, leave the room or end the interview there. When the participant expressed their wish to resume the interview, I regained informed consent before beginning the recording. After the interview, I also reminded the participant of their right to withdraw, and they asked me to edit out the section that caused them distress. Therefore, this section of the interview was not transcribed, the recording was deleted and none of this data or information was used in the analysis.

3.5.7.2 Focus groups

Clinicians agreed to the inclusion of the focus group in the trial feedback sessions before the session. Participation was voluntary, and participants were able to leave or withdraw at any point during the focus group. However, due to focus groups constructing shared knowledge and meaning, if a participant did withdraw, any data

that they had already contributed could not be withdrawn. Clinicians were reimbursed for their time participating in the focus group pro-rata at their hourly rate. Informed consent was gained from all participants before beginning. The focus groups were audio recorded and transcribed by the researcher, with all data kept confidential in line with Keele Clinical Trials Unit's Standard Operating Procedures. Any identifiable information was anonymised. Additionally, whilst the focus groups were not designed to address any personal topics, it is important to note that participants in each focus group worked together in the same GP practice, and therefore some participants may have restrained or tailored their responses in light of this dynamic. Furthermore, the design of the focus groups may have introduced a power dynamic between senior GPs compared to those more newly qualified. This may have especially been evident for those GPs with less experience compared to their colleagues, for example GPs still in training alongside GP partners with decades of experience. Participants were assured that they were not under pressure to contribute, however this was balanced by gently encouraging some of the quieter participants to answer a few specific questions.

3.5.8 Reflexivity

When using both the pragmatic approach and qualitative methodology, the researcher's own demographics, experience, background and perspectives will influence the research process, deciding upon important research questions, methods of data collection, analysis methods and interpretation (Malterud, 2001). Specifically, the researcher is not objective and separate to the research, rather a part of it (Krefting, 1990). Often, this is conceptualised by describing how different researchers will reach different conclusions from the same data; however, these conclusions are equally valid (Malterud, 2001). Reflexivity is the process by which researchers acknowledge this impact, and identify the preconceptions and beliefs brought into the study (Malterud, 2001). When considered thoroughly, reflexivity can be a useful tool in qualitative research, improving understanding of decisions made in the research

process, the interpretation and conclusions presented, and ultimately the transferability of these applications to future research and applied settings.

Reflexivity in this study was undertaken through various methods. Firstly, after every qualitative interview and focus group I completed a summary sheet identifying any pertinent features that I felt were important (Appendix 7). Additionally, I noted down my thoughts, feelings and reactions both during and after the contact. This contact sheet used a template adapted from Miles & Huberman (1994), in order to ensure that the same data was captured after every interview or focus group. Secondly, I also kept freehand fieldnotes so that I could iteratively elaborate upon and explore my own preconceptions, thoughts and ideas in relation to the research. Thirdly, I discussed the interviews and focus groups, contact sheets, codes, themes, ideas and beliefs with my supervisors and other members of the STarT MSK study team from differing backgrounds, including sociology, epidemiology, physiotherapy, general practice and psychology. Through these discussions, I was able to discern my own preconceptions and explore the analysis of data from other points of view, enhancing my own interpretations of the data.

3.6 Qualitative analysis

The analysis method is integral in research, framing the interpretation of the data and subsequent conclusions and implications to be drawn. This study utilised thematic analysis (Braun & Clarke, 2006) with the constant comparison method (Glaser, 1965) to analyse both the interviews with patients and focus groups with clinicians.

3.6.1 Thematic Analysis

Thematic analysis is an analytic method for 'identifying, analysing and reporting patterns within data' (Braun & Clarke, 2006). One of the strengths of thematic analysis is its theoretical flexibility; unlike other qualitative analysis methods such as

interpretative phenomenological analysis or grounded theory, thematic analysis is arguably atheoretical. Therefore, thematic analysis can be used across the spectrum of theoretical positions, from realist to constructionist, and is suitable for this study anchored in a pragmatic approach (Braun & Clarke, 2006). Despite this atheoretical position, thematic analysis can produce thorough, rich and complex data if undertaken within a rigorous approach. Braun & Clarke (2006) clarified and structured the process of thematic analysis in order to provide a more robust and reliable process of utilising it as a thorough and in-depth qualitative analysis method. Thematic analysis has been used widely in research, especially health research, due to its ability to facilitate rich analysis whilst retaining an identifiable and accessible manner for those apart from academia; such as patients and healthcare professionals (Braun & Clarke, 2014).

Braun and Clarke (2006) identified six steps to facilitate rigorous thematic analysis (see Table 3.2). Thematic analysis of the interviews and focus group followed these six steps. Firstly, I transcribed all audio recorded data. This had two advantages; the tone and context of participants' speech in addition to unrecorded behaviour that I observed were able to be preserved in the transcript whilst I was also able to become more familiar and immersed in the depth of the data itself (Bailey, 2008). Secondly the data was coded. The coding process involved identifying any piece of data that I deemed important, interesting, relevant or salient (see example in Appendix 8). Coding was flexible, in that one portion of data could be given multiple codes.

Table 3.2: Phases of thematic analysis (taken from Braun & Clarke, 2006)

<i>Stage</i>	<i>Description</i>
<i>Familiarizing yourself with your data</i>	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas
<i>Generating initial codes</i>	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code
<i>Searching for themes</i>	Collating codes into potential themes, gathering all data relevant to each potential theme
<i>Reviewing themes</i>	Checking if the themes work in relation to the coded extracts (Level 1) and the entire dataset (Level 2), generating a thematic 'map' of analysis
<i>Defining and naming themes</i>	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme
<i>Producing the report</i>	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis

Transcripts were coded as data collection was ongoing, in order to iteratively inform future interviews and focus groups. I started to develop themes throughout this process, through grouping codes together to form 'umbrella' concepts; which were at a higher level of abstraction than the initial codes. Importantly, contrasting viewpoints were included in order to present agreement and disagreement within the theme. Once data saturation was reached and data collection ceased, themes were finalised and cross referenced with the data in order to ensure that they were relevant. Through this process, I identified three themes from the data; two formed from the integration of clinician and patient data, and one only from the clinician data.

Steps two to five of thematic analysis were undertaken using NVivo software to manage the data, however manual highlighting of data and visual aids such as theme development mind maps were used to aid the interpretation and cohesiveness of analysis (see Appendix 9).

3.6.2 Constant comparison methods

The constant comparison method was used in conjunction with thematic analysis of the interviews and focus groups. The constant comparison method was initially developed as part of the grounded theory approach (Glaser & Strauss, 1967), however has since been used separately from grounded theory with other analytic methods (Fram, 2013).

The constant comparative method involves ‘comparing one respondent’s beliefs, stance and actions with another respondents, or one experience with another’ (Charmaz, 2006), and by comparing, contrasting and juxtaposing ‘similarities and differences across the data meaning and processes that shape the phenomenon can be elucidated’ (Frost, 2011). Originally, constant comparative methods as part of a grounded theory approach enabled researchers to generate theory from data that was more integrated, consistent and plausible whilst retaining the flexibility needed in theory generation and qualitative data analysis (Glaser, 1965). The constant comparative method in grounded theory has four stages: (1) comparing incidents applicable to each category, (2) integrating categories and their properties, (3) delimiting the theory, (4) writing the theory (Glaser 1965).

However, it is argued that constant comparison can be divorced from the grounded theory approach; comparison of data is present in many forms of qualitative analysis (Boeije, 2002). Indeed, O’Connor et al., (2008, p.41) state that ‘constant comparison, the data analysis method, does not in and of itself constitute a grounded theory design’, and highlight that constant comparative methods have been used successfully in both reductionist and interpretivist approaches. Typically, the ‘constant’ aspect of this method is seen as part of grounded theory; the constant revisiting and reanalysing until saturation is reached. Yet, the act of comparing data and codes against one another both within and across data sets is not unique to grounded theory; particularly the first step in the process suggested by Glaser (1965): ‘whilst coding an incident for a

category, compare it with the previous incidents coded in the same category’.

Furthermore, one of the benefits of using constant comparative methods is that it is not limited by the data form, and can be used with interviews, focus groups, documents, diaries and more (Glaser, 1965). Therefore, in this study, the constant comparative method was utilised alongside thematic analysis to aid understanding, to produce richer and more detailed data analysis, and to further complement any comparisons of low, medium and high risk older adults in the different age categories. Specifically, as each new transcript was coded, new codes identified from the data were noted, and retroactively searched for in previous transcripts. Similarly, after the initial coding of the transcript, codes that had been identified in previous transcripts were examined in the current transcript. This allowed connections to be made across cases. This was also implemented across methods; as the interviews and focus groups addressed the same topics, codes were searched for across all interview and focus group transcripts.

3.7 Patient and Public Involvement and Engagement (PPIE)

PPIE involves actively including members of the public in research, and within health research is recommended by the National Institute for Health Research, British Medical Association and the Health Research Authority. Overall, PPIE can improve the quality and acceptability of research to all stakeholders, including patients, clinicians, funders and researchers (Ennis & Wykes, 2013; INVOLVE, 2019). PPIE has many benefits in shaping and evolving health research, including development of user-relevant research questions, the appropriateness of research, creating user-friendly information such as information leaflets, and development of effective recruitment and dissemination strategies (Brett et al., 2014). Through drawing on their personal experiences, PPIE members can bring novel insights into many parts of the research process unknown to researchers, which is especially important for health research relying on patient-reported outcomes (Haywood et al., 2015), such as the STarT MSK trial.

PPIE had a strong influence on the development of the thesis; members were knowledgeable about the STarT MSK trial's aims, progress and methods, having been involved from its inception (Hill et al. 2020b); had all experienced musculoskeletal pain and were aged over 60. Two PPIE meetings were held throughout the study, and helped to shape the design and research questions. In the first meeting, PPIE members raised the question of why this study focused on the age of 65 as a definition for 'older adult'. This discussion influenced the development of the first research question; exploring differences in clinical profiles between younger and older adults which is presented in Chapter Four of this thesis. The PPIE group also explored the initial qualitative thematic analysis findings. This was done early in the analysis process – after the initial themes were beginning to be identified to allow for PPIE feedback to be integrated into the analysis and write up. Before I presented the initial themes that I had developed, the PPIE group were given a booklet containing a number of quotes from both patient interviews and clinician focus groups. PPIE members were asked to note down any thoughts they had about the quotes alongside (see Appendix 10 for examples) before discussing these as a group. This discussion was very helpful in providing face validity upon the initial themes, and as the themes were presented this helped to solidify that these were of importance to patients. The PPIE group were also able to add context to the interpretation of some quotes, for example by reflecting upon why continuity of care might be so imperative to older adults (e.g. because they grew up where having a 'family doctor' was the norm). After both meetings, I gave feedback to the PPIE group, highlighting how their input had influenced the study and the decisions I made.

3.8 Chapter conclusion

This chapter has given the context of the research to be presented throughout the rest of the thesis. The philosophical underpinning of pragmatism was discussed, aligning with the applied aim of this thesis to investigate stratified care for older adults with

musculoskeletal pain. An overview of the sequential explanatory mixed methods approach was detailed; and provides the foundations for the following findings chapters. The quantitative and qualitative methods were discussed, along with ethical issues to be considered. The following four chapters present the results and findings of the thesis. The next chapter will present the methods and results of the quantitative analyses examining differences in the clinical profiles of participants in the KAPS cohort study.

Chapter Four: The clinical profiles of patients with musculoskeletal pain by age

4.1 Chapter introduction

As concluded from the background and literature review chapters, musculoskeletal pain in older adults is complex. There are a multitude of factors that influence both older adults' experience of pain and General Practitioner (GP) consultations, yet often only one or two factors are examined in each study, rather than incorporating all biopsychosocial factors to provide a holistic overview of older adults' clinical profiles. The definitions of 'older adult' also vary between studies, and typically the older adult population is considered as a homogeneous group, despite evidence that 'young-old' adults and 'oldest-old' adults have very different lives and experiences (Elias, Thomas & Lowton, 2014; Zarit, Griffiths & Berg, 2004). Therefore, this chapter will examine differences in the clinical profiles of participants by age in two ways. Firstly, participants will be dichotomised into those aged below 65 and 65 and above. Secondly, participants will be categorised into narrower age categories in order to explore differences between 'younger' older adults and the 'oldest' older adults.

4.2 Chapter context

Prognostic stratified care uses the clinical profiles of patients to predict patients' risk of having high pain intensity (defined as a score ≥ 5 on a 0-10 numerical rating scale) in six months' time. To enable differences between all ages of patients and the subsequent impact this may have upon patient clinical profiles to be explored, this chapter examines the biopsychosocial clinical profiles of patients who had attended a GP appointment for back, neck, shoulder, knee or multisite musculoskeletal pain. This analysis will give an overview of the population attending GP consultations for musculoskeletal pain, providing context for further work in this thesis, specifically analysis of the discriminative and predictive validity of the STarT MSK tool (Chapter

Five) and patient interviews and GP focus groups with participants in the STarT MSK main trial (Chapters Six and Seven). As the thesis uses the definition of 'aged 65 and over' for older adults, the analysis will examine differences between populations using this definition, and then examine differences between populations within ~10-year age ranges.

Splitting patients into these age categories fulfils multiple purposes. The use of both dichotomised and narrow age categories allows exploration around the various definitions of 'older adult'. The dichotomous analyses display differences in the widely used definition of 'older adults' being aged 65 or over. Whereas using narrower age categories allows observation of age differences across the lifespan independent of a predefined 'older adult' label. This is important for several reasons. Firstly, as the populations labelled 'older adult' in research often vary from as young as 50 years of age to 70 years of age, it can be difficult to compare study findings. Secondly, previous research investigating pain in older adults frequently includes only older adults; comparing results to separate studies in younger adults. By investigating the same variables across the entire age range of the study populations, age comparisons can be made within the same study settings. Thirdly, the small amount of research that has examined differences between younger and older adults within the same study tends to categorise large age ranges into the same groups; for example, Rustøen et al., (2005) categorised adults aged 18-39 as 'younger adults', adults aged 40-59 as 'middle aged adults', and adults aged 60-81 as 'older adults'. This approach to age categorisation assumes that experiences are relatively homogenous across these large age ranges, which is known to be disputed (World Health Organi, 2020). By using narrower age ranges, this study allows nuances in the pain experience by age to be observed, which may be obfuscated in larger categories. These differences are important to recognise when employing a stratified care approach to musculoskeletal

pain, as the pain management recommendations are matched only to risk subgroup and do not take into account age.

4.3 Aim

This chapter aimed to address the following research question: are the clinical profiles of patients with musculoskeletal pain stratified into low, medium and high risk subgroups different between older and younger cohorts?

4.4 Methods

To investigate this aim, secondary analysis of the baseline Keele Aches and Pains Study (KAPS) dataset was undertaken.

4.4.1 Overview of the KAPS dataset

The purpose of KAPS data collection was to develop and validate the draft STarT MSK tool, and investigated pain, physical, psychological and social factors. The questionnaire is available in Appendix 11. As the aim of this analysis was to explore clinical profiles from a cross-sectional perspective, this dataset provided the appropriate data to address this. The KAPS baseline questionnaire was completed by patients who had attended a GP consultation for one of the five most common musculoskeletal pain sites (back, neck, knee, shoulder and multisite), between one and two weeks after their consultation. In the baseline dataset, 1897 patients were initially included; however, patients with an incomplete STarT MSK tool score were removed as they were unable to be stratified into a risk subgroup. After removal of this data, 1697 patients were included in the final analysis. The participants were mostly male (60.2%), and had a mean age of 57.5 years (standard deviation: 15.9; ranging from 18 to 80 years). The majority of participants had experienced their pain condition for more than six months (58.0%), with a mean pain intensity across all participants of 5.3 (standard deviation: 2.4) on a 0 (no pain) to 10 (worst pain) scale. Half of all

participants reported having pain in multiple sites (50.6%), with the back being the second most common pain site (21.4%), followed by knee (18.9%), shoulder (5.8%) and neck (3.2%).

4.4.2 Variables

The KAPS dataset enabled a biopsychosocial approach of the pain experience to be used. Variables were selected on their contribution to describing the clinical profiles of patients as ascertained by previous analyses as part of the KAPS study within this dataset and previous literature. These variables are presented in Table 4.1.

4.4.3 Analysis

Two stages of analysis were undertaken. The statistical analysis plan specifies that a minimum of 100 participants must be included in each strata to provide power for analyses, based on previous studies of musculoskeletal pain (Hill et al., 2008, Hill et al., 2011). Therefore, participants were firstly dichotomised into 'younger' (<65) and 'older' adult age categories (≥ 65). Differences between factors collected at baseline were assessed using independent samples t-tests for continuous variables and chi square test for categorical variables. Secondly, participants were split into narrower age categories (18-24; 25-34; 35-44; 45-54; 55-64; 65-74; 75-84; 85+) and analysed descriptively using means and standard deviations for continuous variables and proportions for categorical variables. Due to the numbers of participants in these stratas not meeting the minimum sample size described above, exploratory analyses through descriptives were used rather than t-tests and chi-square tests. Data were stored, managed and analysed using SPSS version 24.

Table 4.1 List of variables used

Variable		Question/Instrument	Response options	Notes
Demographics	Age	Date of birth	18 – 97	Coded into age categories: <65 and ≥65; 18-24, 25-34, 35-44, 45-54, 55-65, 65-74, 75-84, 85+
	Risk of moderate/severe pain	Keele STarT MSK Tool (Dunn et al., 2020)	0 – 12	Coded into subgroups: 0 – 4 = Low risk 5 – 8 = Medium risk 9 – 12 = High risk
Pain characteristics	Pain intensity	Mean score from three questions: least, usual and current pain (Dunn, Jordan & Croft, 2006)	0 (No pain) – 10 (Pain as bad as could be)	0 = No pain 10 = Pain as bad as could be
	Pain interference	PROMIS (Amtmann et al., 2010)	0 (No interference) – 1 (Constant interference)	Standardised t-scores 0.5 = average of the population 0.1 increments = 1 standard deviation
	Pain bothersomeness	‘In the last two weeks how bothersome has your pain been?’ (Dunn & Croft, 2005)	Not at all (1), Slightly (2), Moderately (3), Very much (4), Extremely (5)	N/A
	Pain site	‘In which part of your body is your current pain problem?’	Back, Neck, Shoulder, Knee, More than one part of the body	One option selected
	Pain duration	‘How long have you had your current pain problem?’	0 to 1 week, 1 to 2 weeks 3 to 4 weeks, 4 to 5 weeks 6 to 8 weeks, 9 to 11 weeks 3 to 6 months, 6 to 9 months Over 1 year	N/A
Physical factors	Physical function	SF-36 Physical Component Score (Ware Jr, 2000)	0 (Worse function) – 100 (Better function)	Calculated from physical functioning, bodily pain, general health perceptions and physical role functioning subscales
	Sleep	Jenkin’s Sleep Questionnaire (Jenkins, Stanton, Niemcryk & Rose, 1988)	0 (No problems) – 20 (Frequent problems)	Dichotomised into: ≤12 = Not having sleep problem ≥13 = Having sleep problem
	Vitality	SF-36 Vitality Subscale (Ware Jr, 2000)	0 (Less vitality) – 100 (Higher vitality)	N/A

Variable		Question/Instrument	Responses	Notes
	Comorbidities	'What long term medical conditions do you have?'	Diabetes, Heart problems, Breathing problems, CFS/ME/fibromyalgia, Anxiety/depression/stress, Other	Mean comorbidity count also calculated
Psychological factors	Mental health	SF-36 Mental Component Score (Ware Jr, 2000)	0 (Worse mental health) – 100 (Better mental health)	Calculated from emotional role functioning, social role functioning, vitality and mental health subscales
	Feeling tense and anxious	'How tense or anxious have you felt in the last week?'	0 (Not at all) – 10 (Extremely)	N/A
	Feeling depressed	'How much have you been bothered by feeling depressed?'	0 (Not at all) – 10 (Extremely)	N/A
	Pain catastrophizing	Catastrophizing subscale of Coping Strategies Questionnaire (Harland & Georgieff, 2003)	0 (No catastrophising) – 36 (High catastrophising)	N/A
	Pain self-efficacy	Pain Self-Efficacy Questionnaire (Nicholas, 2006)	0 (Low self-efficacy) – 60 (High self-efficacy)	N/A
Social factors	Health literacy	'How often do you need to have someone help you when you read instructions, pamphlets, or other written material from your doctor or pharmacy?' (Morris, MacLean, Chew & Littenberg, 2006)	Never (1) Rarely (2) Sometimes (3) Often (4) Always (5)	Dichotomised into: ≤ 2 = High health literacy ≥ 3 = Low health literacy
	Daily task support	'Do you have anyone to help with daily tasks?'	Yes, No, No need	N/A
	Emotional support	'Do you have anyone to provide you with emotional support?'	Yes, No, No need	N/A
	Living situation	'Do you currently live alone?'	Yes, No	N/A
Quality of Life	Quality of life	EURO-QOL 5D 5L (Herdman et al., 2011)	-0.594 – 1	Health state index scores representative of the UK. Negative values = 'health state worse than dead' 0 = 'health state equivalent to dead' 1 = 'full health'

4.5 Results for dichotomised age analyses

The results from the analyses are presented below. Firstly, the results comparing older adults to younger adults are presented, followed by the results by age categories.

4.5.1 Differences between older adults and younger adults

Firstly, an overview of the characteristics for younger and older adults are given below in Table 4.2.

Table 4.2: Overview of population split by age

	% (n)	Mean age	Low risk % (n)	Medium risk % (n)	High risk % (n)
<65	63.7 (1081)	48.2	62.3 (263)	62.7 (444)	66.0 (374)
65+	36.3 (616)	73.8	37.7 (159)	37.3 (264)	34.0 (193)

Roughly two thirds of participants from the whole cohort were aged under 65, and this pattern was consistent across the risk subgroups. The results from independent samples t-tests for continuous variables are presented in Table 4.3, and the results from chi square tests for categorical variables are presented in Table 4.4. The mean difference shows the average difference for older adults compared to younger adults. Of the 19 variables included in the analysis, 14 showed significant differences between older and younger adults. These will be detailed below.

Table 4.3: Differences between older adults compared to younger adults for continuous variables

Factor	Risk subgroup	<65 Mean (SD)	≥65 Mean (SD)	Mean difference	t score	df	Confidence intervals	Sig.
Pain intensity	Low	2.734 (1.638)	2.815 (1.539)	.081	-.503	420	-.396, .234	.615
	Medium	5.344 (1.721)	5.316 (1.764)	-.029	.212	706	-.236, .294	.832
	High	7.240 (1.552)	7.073 (1.753)	-.167	1.115	350	-.127, .461	.265
Pain bothersomeness	Low	2.610 (.819)	2.500 (.791)	-.105	1.288	415	-.055, .266	.199
	Medium	3.760 (0.755)	3.510 (0.736)	-.253	4.346	701	.139, .368	<.001*
	High	4.320 (0.679)	4.210 (0.655)	-.119	1.991	561	.003, .235	.047*
Pain interference	Low	54.082 (6.458)	52.750 (6.823)	-1.331	2.002	417	.024, 2.638	.046*
	Medium	62.492 (5.726)	60.789 (5.232)	-1.704	3.940	703	.855, 2.552	<.001*
	High	69.341 (4.777)	67.657 (5.025)	-1.684	3.883	560	.832, 2.535	<.001*
Physical function	Low	47.012 (7.572)	43.687 (8.387)	-3.326	4.009	289	1.737, 4.913	<.001*
	Medium	37.777 (8.065)	35.234 (7.944)	-2.543	3.961	671	1.283, 3.804	<.001*
	High	28.855 (7.371)	27.414 (7.216)	-1.441	2.145	539	1.211, 2.761	.032*
Vitality	Low	49.291 (9.044)	50.767 (9.424)	1.476	-1.595	418	-3.296, .343	.111
	Medium	39.652 (10.121)	42.725 (9.274)	3.073	-4.117	591	-4.538, -1.607	<.001*
	High	32.885 (9.379)	36.427 (9.281)	3.542	-4.259	562	-5.175, -1.908	<.001*
Average comorbidity count	Low	.559 (.728)	1.013 (.928)	.454	-5.583	420	-.613, -.294	<.001*
	Medium	0.853 (0.929)	1.314 (0.937)	.461	-6.364	705	-.603, .319	<.001*
	High	1.428 (1.098)	1.819 (1.183)	.391	-3.911	565	-.587, -.195	<.001*
Mental health	Low	51.312 (9.774)	54.203 (7.638)	2.890	-3.323	375	-4.600, -1.180	.001*
	Medium	43.364 (11.582)	48.835 (11.207)	5.471	-5.972	671	-7.270, -3.672	<.001*
	High	33.602 (11.975)	38.117 (12.389)	4.516	-4.063	539	-6.700, -2.332	<.001*
Feeling tense/anxious	Low	2.900 (2.416)	2.357 (2.233)	-.548	2.292	416	.077, 1.010	.022*
	Medium	5.150 (2.384)	4.236 (2.392)	-.915	4.891	696	.548, 1.282	<.001*
	High	7.029 (2.102)	6.484 (2.409)	-.545	2.640	333	.139, .952	.009*
Feeling depressed	Low	1.697 (2.377)	1.038 (1.700)	-.659	3.300	406	.267, 1.052	.001*
	Medium	3.984 (3.048)	2.792 (2.681)	-1.193	5.395	597	.744, 1.641	<.001*
	High	6.623 (2.884)	5.646 (3.024)	-.9776	3.736	561	.464, 1.491	<.001*

Table 4.3 continued

Factor	Risk subgroup	<65 Mean (SD)	≥65 Mean (SD)	Mean difference	t score	df	Confidence intervals	Sig.
Pain catastrophising	Low	3.947 (5.192)	2.620 (3.709)	-1.327	3.047	407	.471, 2.182	.002*
	Medium	9.437 (7.077)	6.316 (5.863)	-3.121	6.325	631	.463, 2.152	<.001*
	High	17.861 (9.005)	13.370 (8.795)	-4.491	5.659	563	2.932, 6.050	<.001*
Pain self-efficacy	Low	51.552 (8.526)	51.627 (9.230)	.0749	-0.84	417	-1.818, 1.668	.933
	Medium	38.496 (12.962)	40.912 (12.179)	2.416	-2.442	701	-4.329, -.473	.015*
	High	23.277 (12.857)	26.358 (14.677)	3.081	-2.439	332	-5.567, -.596	.015*
Quality of life	Low	.787 (.108)	.768 (.107)	-.0186	1.706	416	-.003, .040	.089
	Medium	0.615 (.192)	0.631 (.154)	.0133	-1.203	633	-.042, .010	.229
	High	.314 (.264)	0.357 (0.262)	-.0238	-1.826	549	-.090, .003	.068

Table 4.4: Differences between older adults compared to younger adults for categorical variables

Factor	Risk subgroup	<65	≥65	Chi square value	df	Sig.
Pain site	Low	Neck: 4.6	Neck: 5.7	11.696	4	.020*
		Back: 30.0	Back: 15.7			
		Shoulder: 11.8	Shoulder: 11.3			
		Knee: 26.2	Knee: 32.1			
		Multisite: 27.4	Multisite: 35.1			
	Medium	Neck: 4.1	Neck: 4.2	6.718	4	.152
		Back: 22.3	Back: 18.2			
		Shoulder: 7.0	Shoulder: 3.4			
		Knee: 18.0	Knee: 21.6			
		Multisite: 48.6	Multisite: 52.7			
	High	Neck: 0.8	Neck: 1.0	2.652	4	.618
		Back: 21.7	Back: 16.6			
		Shoulder: 1.9	Shoulder: 1.6			
		Knee: 10.4	Knee: 13.0			
		Multisite: 65.2	Multisite: 67.9			

Table 4.4 continued

Factor	Risk subgroup	<65	≥65	Chi square value	df	Sig.
Pain duration >6 months (%)	Low	34.2	39.0	.980	1	.322
	Medium	54.5	55.3	.043	1	.836
	High	77.5	79.8	.380	1	.537
Sleep problem (%)	Low	38.2	38.9	.020	1	.889
	Medium	67.6	57.0	8.031	1	.005*
	High	84.9	76.7	5.909	1	.015*
Low health literacy (%)	Low	6.1	8.2	.661	1	.416
	Medium	9.5	16.7	8.059	1	.005*
	High	30.4	30.1	.006	1	.937
Living alone (%)	Low	9.6	25.3	18.599	1	<.001*
	Medium	14.7	24.1	9.803	1	.002*
	High	21.2	34.2	11.310	1	.001*
Daily task support	Low	Yes: 66.5	Yes: 67.7	.348	2	.840
		No: 6.5	No: 5.1			
		No need: 27.0	No need: 27.2			
	Medium	Yes: 76.7	Yes: 82.0	2.856	2	.240
		No: 10.6	No: 7.7			
		No need: 12.7	No need: 10.3			
	High	Yes: 82.7	Yes: 89.1	5.864	2	.053
		No: 13.5	No: 6.7			
		No need: 3.8	No need: 4.1			
Emotional support	Low	Yes: 74.9	Yes: 78.5	1.355	2	.508
		No: 4.6	No: 2.5			
		No need: 20.5	No need: 19.0			
	Medium	Yes: 78.1	Yes: 76.9	1.336	2	.513
		No: 7.7	No: 6.2			
		No need: 14.3	No need: 16.9			
	High	Yes: 79.5	Yes: 82.9	2.512	2	.285
		No: 12.7	No: 8.3			
		No need: 7.8	No need: 8.8			

4.5.2 Pain characteristics

Across all risk subgroups, there were no significant differences between older and younger adults for measures of baseline pain intensity or pain duration, however older adults did report significantly lower pain interference than younger adults. There were some risk subgroup specific differences: in the medium and high risk subgroups, older adults reported significantly less pain bothersomeness; and there were significant differences in pain site in the low risk subgroup such that the proportion participants reporting multisite pain increased with age.

4.5.3 Physical health characteristics

Across all risk subgroups older adults reported significantly worse physical function scores, and a higher average count of comorbidities. In the medium and high risk subgroups, there were significant differences between older adults and younger adults in classification of having a sleep problem and vitality scores; such that significantly fewer older adults had a sleep problem, and older adults reported higher vitality than younger adults.

4.5.4 Psychosocial characteristics

Across all risk subgroups older adults reported significantly better mental health scores (including feeling less tense and anxious, and feeling less depressed), pain catastrophizing and pain self-efficacy. Whilst across all risk subgroups there were significant differences as to whether participants lived alone (such that higher proportions of older adults lived alone), there were no significant differences in the proportions of participants reporting having support for daily tasks or in their emotional wellbeing. In the medium risk subgroup only, there was a significant difference between the proportions of older and younger adults with low health literacy; more older adults had low health literacy than younger adults. There were no differences in quality of life scores between older and younger adults in any risk subgroup.

4.6 Results of age category analyses

4.6.1 Descriptive results across age categories and risk subgroups

Firstly, the proportions of every category in each risk subgroup were reviewed, and these results are displayed in Table 4.5.

Table 4.5 Age and risk split

	Low risk		Medium risk		High risk	
Age category	n	%	n	%	n	%
18-24	19	38.0	19	38.0	12	24.0
25-34	24	22.9	45	42.9	36	34.3
35-44	53	26.2	75	37.1	74	36.6
45-54	79	23.7	143	42.9	111	33.3
55-64	88	22.5	162	41.4	141	36.1
65-74	91	24.4	166	44.5	116	31.1
75-84	57	29.4	77	39.7	60	30.9
85+	11	22.4	21	42.9	17	34.7
Total	422	24.8	708	41.7	567	33.4

Age categories showed generally the same pattern of proportions across risk subgroups: lowest proportion in low risk and the highest proportion in medium risk. The consistency of these proportions across ages indicates that there is no interaction between patient age and risk stratification, i.e. age is not associated with being stratified into a specific risk subgroup.

4.6.2 Pain characteristics

The results for pain characteristics are shown in Table 4.6. Whilst there were no differences between age categories in mean pain intensity across risk subgroups, pain interference decreased for older adults, especially participants aged 85+ in the medium risk subgroup. Similarly, bothersomeness appears to decrease slightly as age increases. Back, knee and multisite were the most common pain sites across all age categories and risk subgroups, although the proportions of participants with back pain tended to decrease slightly in older adults. Across all risk subgroups, the proportions of patients reporting multisite pain increased with age. The proportion of participants reporting chronic pain (duration six months or more) was the lowest in the 18-24 age category in every risk subgroup.

Table 4.6: Descriptive pain characteristic factors by age and risk subgroup

		Pain characteristics (Mean (SD))			Pain site (%)					Pain duration (%)
		<i>Intensity (0-10)</i>	<i>Bothersomeness (0-5)</i>	<i>Interference (0-100)</i>	<i>Neck</i>	<i>Back</i>	<i>Shoulder</i>	<i>Knee</i>	<i>Multisite</i>	<i>>6 months</i>
Low risk	18-24	2.68 (1.38)	2.39 (0.85)	54.08 (6.16)	5.3	26.3	5.3	36.8	26.3	31.6
	25-34	2.87 (1.54)	2.52 (0.73)	53.22 (6.79)	8.3	37.5	4.2	20.8	29.2	20.8
	35-44	2.76 (1.62)	2.72 (0.91)	55.14 (6.18)	0.0	35.8	15.1	24.5	24.5	26.4
	45-54	2.79 (1.73)	2.58 (0.91)	53.83 (7.21)	7.6	32.9	10.1	27.8	21.5	38.0
	55-64	2.64 (1.64)	2.63 (0.68)	53.91 (5.94)	3.4	22.7	14.8	25.0	34.1	39.8
	65-74	3.05 (1.51)	2.60 (0.82)	53.40 (6.68)	4.4	15.4	7.7	37.4	35.2	44.0
	75-84	2.56 (1.61)	2.38 (0.76)	51.55 (7.25)	8.8	15.8	17.5	22.8	35.1	29.8
	85+	2.24 (1.04)	2.27 (0.65)	53.70 (4.94)	0.0	18.2	9.1	36.4	36.4	45.5
Medium risk	18-24	5.23 (2.39)	3.63 (0.60)	64.34 (5.01)	5.0	24.6	11.6	28.4	30.3	36.0
	25-34	5.37 (1.53)	3.89 (0.61)	63.53 (5.60)	5.3	47.4	0.0	26.3	21.1	63.2
	35-44	5.04 (1.68)	3.80 (0.90)	62.51 (5.59)	4.4	22.2	11.1	26.7	35.6	46.7
	45-54	5.45 (1.79)	3.74 (0.76)	62.25 (6.22)	4.0	30.7	9.3	8.0	48.0	48.0
	55-64	5.39 (1.64)	3.74 (0.73)	62.20 (5.43)	5.6	21.0	7.0	14.7	51.7	58.0
	65-74	5.26 (1.82)	3.52 (0.76)	60.83 (5.39)	2.5	16.7	5.6	22.2	53.1	55.6
	75-84	5.66 (1.50)	3.60 (0.65)	61.40 (5.07)	5.4	15.7	4.8	18.7	55.4	56.0
	85+	4.51 (1.99)	3.10 (0.70)	58.26 (3.79)	1.3	22.1	0.0	24.7	51.9	55.8
High risk	18-24	6.86 (1.40)	4.08 (1.00)	67.17 (5.17)	4.8	23.8	4.8	33.3	33.3	47.6
	25-34	6.97 (1.44)	4.31 (0.58)	68.56 (5.34)	4.1	20.8	5.6	19.4	50.1	54.8
	35-44	7.22 (1.57)	4.28 (0.82)	69.91 (5.02)	0.0	16.7	0.0	8.3	75.0	83.3
	45-54	7.30 (1.46)	4.34 (0.60)	69.73 (4.29)	0.0	36.1	2.8	13.9	47.2	77.8
	55-64	7.30 (1.65)	4.36 (0.66)	69.13 (4.80)	1.4	37.8	1.4	5.4	54.1	74.3
	65-74	7.19 (1.72)	4.23 (0.67)	67.95 (5.42)	0.0	13.5	3.6	11.7	71.2	81.1
	75-84	6.69 (1.68)	4.19 (0.60)	66.73 (4.43)	1.4	16.3	0.7	11.3	70.2	75.9
	85+	7.63 (2.03)	4.06 (0.77)	69.01 (3.65)	1.7	16.4	0.9	9.5	71.6	79.3

Table 4.7: Descriptive physical characteristic factors by age and risk subgroup

		Physical			Comorbidities (%)						
		<i>Function (0-100) (Mean (SD))</i>	<i>Sleep problem (%)</i>	<i>Vitality (0-100) (Mean, (SD))</i>	<i>Count (Mean (SD))</i>	<i>Diabetes</i>	<i>Breathing problems</i>	<i>Heart problems</i>	<i>ME/ fibromyalgia</i>	<i>Anxiety/ depression/ stress</i>	<i>Other</i>
Low risk	18-24	51.18 (6.12)	21.1	50.28 (7.95)	0.42 (0.61)	0.0	10.5	5.3	0.0	21.1	5.3
	25-34	48.33 (5.99)	33.3	47.88 (10.34)	0.83 (0.87)	8.3	8.3	4.2	4.2	33.3	25.0
	35-44	46.25 (7.24)	30.8	50.03 (9.22)	0.30 (0.50)	1.9	3.8	3.8	0.0	11.3	9.4
	45-54	47.37 (7.99)	38.0	48.46 (9.30)	0.53 (0.80)	2.5	7.6	10.1	2.5	10.1	20.3
	55-64	45.90 (7.77)	47.7	49.75 (8.65)	0.69 (0.72)	3.4	15.9	14.8	2.3	9.1	23.9
	65-74	44.05 (8.28)	33.3	50.75 (8.97)	0.92 (0.86)	8.8	13.2	40.7	2.2	6.6	20.9
	75-84	43.83 (8.50)	48.2	50.36 (10.43)	1.19 (1.04)	12.3	17.5	50.9	3.5	8.8	26.3
	85+	39.75 (8.54)	36.4	52.94 (8.15)	0.82 (0.75)	0.0	9.1	36.4	0.0	9.1	27.3
Medium risk	18-24	36.29 (7.16)	63.2	37.96 (8.41)	0.32 (0.48)	0.0	10.5	0.0	0.0	10.5	10.5
	25-34	38.22 (6.77)	64.4	41.06 (9.54)	0.80 (1.01)	4.4	11.1	6.7	4.4	33.3	20.0
	35-44	38.44 (9.06)	66.7	37.98 (9.86)	0.76 (0.93)	4.0	9.3	9.3	2.7	21.3	29.3
	45-54	37.46 (8.27)	66.0	39.04 (10.73)	0.73 (0.86)	3.5	9.9	13.4	2.1	21.8	22.5
	55-64	37.81 (7.91)	71.0	40.79 (9.95)	1.08 (0.96)	13.0	17.3	29.6	2.5	17.3	28.4
	65-74	35.86 (7.92)	60.0	43.46 (9.38)	1.25 (0.93)	17.5	19.9	45.2	3.0	15.1	24.7
	75-84	34.86 (7.79)	54.5	41.51 (8.95)	1.44 (1.01)	19.5	24.7	61.0	1.3	10.4	27.3
	85+	31.74 (8.09)	42.9	41.34 (9.37)	1.33 (0.73)	19.0	23.8	57.1	0.0	4.8	28.6
High risk	18-24	32.91 (6.84)	91.7	31.02 (8.94)	1.33 (0.89)	0.0	25.0	8.3	16.7	33.3	50.0
	25-34	32.48 (7.31)	83.3	32.84 (9.63)	1.22 (0.87)	5.6	13.9	0.0	11.1	44.4	47.2
	35-44	29.61 (8.13)	83.8	32.94 (9.36)	1.27 (1.10)	4.1	18.9	12.2	14.9	51.4	25.7
	45-54	29.38 (7.02)	86.4	32.65 (8.68)	1.34 (1.01)	10.8	16.2	27.0	10.8	33.3	36.0
	55-64	26.78 (6.68)	84.3	33.22 (9.99)	1.64 (1.20)	19.9	22.0	38.3	5.7	41.1	36.9
	65-74	28.01 (7.29)	79.3	35.49 (9.51)	1.75 (1.13)	25.0	24.1	54.3	6.9	37.9	26.7
	75-84	26.79 (7.66)	71.7	36.79 (8.08)	2.03 (1.30)	25.0	38.3	70.0	6.7	35.0	28.3
	85+	25.50 (4.26)	76.5	41.44 (10.46)	1.53 (1.07)	17.6	29.4	58.8	0.0	17.6	29.4

Table 4.8 Descriptive psychosocial characteristic factors by age and risk subgroup

		Psychological (Mean (SD))					Social (%)									Quality of Life
		<i>Mental health (0-100)</i>	<i>Feeling tense /anxious (0-10)</i>	<i>Feeling depressed (0-10)</i>	<i>Pain catastroph- izing</i>	<i>Pain self- efficacy</i>	<i>Low health literacy</i>	<i>Living alone</i>	<i>Daily task support</i>			<i>Emotional support</i>				<i>(-.574-1)</i>
Low risk	18-24	49.39 (10.66)	2.68 (2.24)	1.63 (2.29)	5.05 (5.91)	49.28 (8.81)	15.8	0.0	68.4	0.0	31.6	73.7	0.0	26.3		0.79 (0.13)
	25-34	48.31 (9.63)	3.83 (2.60)	2.08 (2.43)	5.92 (5.70)	50.08 (10.15)	8.3	4.3	70.8	8.3	20.8	79.2	4.2	16.7		0.81 (0.09)
	35-44	51.17 (10.02)	2.63 (2.23)	1.69 (2.52)	4.09 (5.19)	50.54 (9.34)	7.7	11.5	69.8	11.3	18.9	73.6	5.7	20.8		0.77 (0.11)
	45-54	50.69 (9.74)	3.01 (2.37)	1.92 (2.60)	3.96 (5.79)	51.76 (8.19)	3.8	13.9	63.3	7.6	29.1	73.4	3.8	22.8		0.79 (0.11)
	55-64	53.11 (9.38)	2.75 (2.53)	1.40 (2.09)	3.07 (4.13)	52.83 (7.72)	4.5	8.0	65.9	3.4	30.7	76.1	5.7	18.2		0.79 (0.10)
	65-74	54.34 (6.69)	2.63 (2.37)	1.20 (1.80)	2.68 (3.49)	52.10 (8.27)	5.5	18.7	65.9	5.5	28.6	81.3	3.3	15.4		0.77 (0.10)
	75-84	53.28 (8.91)	2.00 (2.05)	0.74 (1.52)	2.59 (4.12)	51.27 (10.09)	8.8	32.1	67.9	5.4	26.8	75.0	1.8	23.2		0.78 (0.12)
	85+	57.91 (7.74)	1.90 (1.73)	1.30 (1.64)	2.27 (3.52)	49.55 (12.46)	27.3	45.5	81.8	0.0	18.2	72.7	0.0	27.3		0.73 (0.10)
Medium risk	18-24	43.72 (10.67)	5.16 (2.03)	3.84 (3.18)	9.11 (6.16)	35.63 (10.45)	5.3	10.5	73.7	21.1	5.3	73.7	0.0	26.3		0.61 (0.17)
	25-34	40.34 (11.93)	5.47 (2.81)	4.69 (3.36)	10.91 (7.75)	37.07 (11.66)	13.3	15.6	73.3	15.6	11.1	75.6	17.8	6.7		0.62 (0.19)
	35-44	41.02 (11.10)	5.46 (2.18)	4.39 (3.13)	11.01 (7.31)	36.39 (13.48)	9.3	13.3	85.3	8.0	6.7	89.3	5.3	5.3		0.62 (0.20)
	45-54	43.92 (12.17)	5.06 (2.32)	3.89 (2.93)	9.83 (6.87)	37.88 (13.36)	11.9	12.0	78.9	10.6	10.6	74.6	8.5	16.9		0.62 (0.20)
	55-64	44.72 (11.10)	4.99 (2.45)	3.70 (2.99)	7.99 (6.85)	40.73 (12.78)	6.8	18.0	72.0	9.3	18.6	77.0	6.2	16.8		0.61 (0.18)
	65-74	49.68 (11.26)	4.10 (2.36)	2.65 (2.58)	6.37 (5.88)	41.13 (12.04)	14.5	16.3	81.3	7.2	11.4	77.6	5.5	17.0		0.64 (0.15)
	75-84	47.14 (10.65)	4.64 (2.52)	3.16 (2.91)	5.99 (5.93)	41.81 (11.84)	18.2	31.6	81.6	9.2	9.2	77.6	9.2	13.2		0.63 (0.14)
	85+	48.33 (12.49)	3.80 (1.99)	2.55 (2.56)	7.10 (5.69)	35.70 (13.91)	28.6	63.2	89.5	5.3	5.3	68.4	0.0	31.6		0.57 (0.20)
High risk	18-24	33.90 (10.38)	6.25 (2.38)	6.58 (2.19)	20.33 (7.05)	25.83 (10.03)	25.0	8.3	66.7	25.0	8.3	75.0	16.7	8.3		0.45 (0.25)
	25-34	32.91 (12.20)	6.56 (2.27)	6.94 (2.88)	19.75 (8.25)	23.06 (12.11)	25.0	22.2	82.9	14.3	2.9	88.9	5.6	5.6		0.36 (0.29)
	35-44	33.31 (12.93)	7.08 (2.17)	6.68 (3.03)	18.41 (9.56)	20.66 (11.36)	32.4	10.8	87.7	8.2	4.1	80.8	11.0	8.2		0.30 (0.28)
	45-54	32.91 (11.65)	7.25 (1.87)	6.77 (2.73)	17.55 (8.80)	24.20 (13.47)	29.1	20.9	85.5	12.7	1.8	78.9	12.8	8.3		0.32 (0.25)
	55-64	34.44 (11.88)	7.01 (2.17)	6.40 (3.00)	17.12 (9.19)	23.77 (13.46)	32.1	27.7	79.3	15.7	5.0	77.3	14.9	7.8		0.29 (0.26)
	65-74	37.26 (11.96)	6.81 (2.31)	6.12 (2.88)	13.68 (8.88)	26.04 (15.33)	23.3	26.7	89.7	8.6	1.7	82.8	10.3	6.9		0.34 (0.28)
	75-84	38.96 (12.91)	5.90 (2.44)	5.02 (3.15)	13.93 (8.96)	26.05 (13.54)	36.7	38.3	88.3	5.0	6.7	85.0	6.7	8.3		0.39 (0.23)
	85+	41.10 (13.61)	6.29 (2.69)	4.71 (3.10)	9.29 (6.82)	29.93 (14.25)	52.9	70.6	88.2	0.0	11.8	76.5	0.0	23.5		0.37 (0.21)

4.6.3 Physical health characteristics

The results for physical health characteristics are shown in Table 4.7. Across all risk subgroups, physical function scores decreased with age, representing poorer physical function. In the medium and high risk subgroups, the proportion of participants categorised as having a sleep problem decreased with age; and in the high risk subgroup, vitality scores increased with age, especially for the 85+ age category. Comorbidities were commonly reported by all age categories and risk subgroups. In each risk subgroup, the average comorbidity count increased with age up to the 75-84 age category, then decreased for participants aged 85+. Whilst the prevalence of diabetes, heart and breathing problems increased with age, self-reported anxiety, stress and depression generally decreased with age, particularly for the 85+ age category. Fibromyalgia was most common in the high risk subgroup, but prevalence decreased with age. Furthermore, reports of 'other' comorbidities increased with age in the low and medium risk subgroups, but decreased in the high risk subgroup.

4.6.4 Psychosocial characteristics

The results for psychosocial characteristics are shown in Table 4.8. Across all subgroups older adults reported better mental health than younger adults (higher mental component scores, lower ratings of feeling depressed and tense or anxious); in addition to lower levels of pain catastrophizing. In the low and medium risk subgroups, pain self-efficacy scores were relatively constant across age, however there was an increase for the 85+ age category in the high risk subgroup.

Although the proportions of participants living alone increased with age across all risk subgroups, the majority of participants in every risk subgroup and age category reported that they had support from someone for daily activities and emotional wellbeing. Across all risk subgroups, the highest proportions of participants reporting 'no need' for emotional support were in the 85+ age category. Participants in the 85+ age category also reported the highest

proportions of low health literacy in every risk subgroup; this was especially prevalent in the high risk subgroup where over half (52.9%) of participants reported needing help to read and understand health information. Despite the differences by age in psychosocial factors, there were no differences in quality of life across ages in each subgroup; although 18-24 had the highest score in the high risk subgroup.

4.7 Key findings

The aim of this chapter was to explore differences in clinical profiles across risk subgroups by age. In both the dichotomous and narrow age category splits, for most of the variables analysed, age differences and patterns were represented in all three risk subgroups.

Notably:

- There were no significant differences in pain intensity across ages.
- Mean physical function scores were significantly worse for older adults than younger adults; these scores decreased as age increased, especially for the 85+ age category.
- Older adults had significantly higher average comorbidity count than younger adults; the proportions of patients reporting diabetes, breathing problems and heart problems increased with age up until the 75-84 age category, before decreasing for the 85+ age category. However, proportions of patients reporting CFS/ME/fibromyalgia and anxiety/depression/stress decreased as age increased.
- Mental health and pain catastrophizing scores were significantly better for older adults than younger adults; especially for the 85+ age category.
- For proportions of participants with low health literacy, the only subgroup to show significant differences between older and younger adults was the medium risk subgroup; however, in every risk subgroup the 85+ age category reported the highest levels. This was particularly evident in the high risk subgroup, with over half of participants aged 85+ reporting low health literacy.

- Across all risk subgroups, there were no significant differences in quality of life between older and younger adults.

4.8 Chapter conclusion

This chapter aimed to investigate whether there were any differences in the clinical profiles of patients with musculoskeletal pain stratified into low, medium and high risk subgroups between older and younger cohorts. Age differences were observed for a majority of the variables, although not for pain intensity. In a number of variables scores were significantly different for participants aged 65 and over, demonstrating the importance of acknowledging the difference in pain experience for older adults. The findings from this chapter have implications for stratified care in relation to the STarT MSK tool and matched treatments. Firstly, as there are significant age differences for a number of physical and psychological factors, and these are factors inherent to risk stratification by prognostic profile, the STarT MSK tool should be tested for validity specifically for older adults, rather than the whole cohort (see Chapter Five). Secondly, findings will also be explored further through planned qualitative work with older adults and clinicians, especially in relation to the influence of psychological and social factors (see Chapters Six and Seven). The next chapter will investigate the predictive and discriminant validity of the STarT MSK Tool by age.

Chapter Five: The discriminant and predictive validity of the STarT

MSK Tool across ages

5.1 Chapter introduction

Chapter Four investigated age differences in the biopsychosocial experience of pain for older adults compared to younger adults, finding a number of differences in psychological and social factors. By showing the same differences across all three risk subgroups (for example better mental health scores as age increased was observed across all risk subgroups), it could be established that these differences were influenced by patient age rather than risk. As the STarT MSK Tool uses a number of biopsychosocial factors to stratify patients, due to these age-related differences it is therefore uncertain that the tool has equal predictive validity for adults at different ages. To address this uncertainty, this chapter will assess the discriminant and predictive validity of the STarT MSK Tool by age. An overview of the STarT MSK Tool and the analysis methods used will be given before the results are presented. The chapter will conclude with key findings and implications for the rest of the thesis.

5.2 STarT MSK Tool

As similar prognostic factors predict outcomes across different musculoskeletal pain sites, it is possible to develop a generic prognostic stratification tool rather than pain site-specific tools. The STarT MSK tool is designed to have the same questions and cut points for all musculoskeletal pain sites, and was developed in the KAPS dataset, and underwent validity analyses in the TAPS pilot dataset to predict pain intensity. Unlike the STarT Back tool, there is no psychosocial subscale in the STarT MSK tool. Whilst psychological factors are included in the tool there is also a focus on physical factors in order to represent the differences between back pain and general musculoskeletal pain populations. Pain intensity is measured using a numerical rating scale (zero – 10), and then weighted into scores from zero – three. The subsequent nine items are scored on a yes (one) / no (zero) basis, and

patient stratification is as follows: zero to four = low risk; five to eight = medium risk; and nine to 12 = high risk.

5.3 Aim

Based upon previous literature and the results from Chapter Four, this chapter aims to answer the research question 'does the STarT MSK Tool have equal discriminant and predictive validity across ages?'

Following on from Chapter Four, this research question will first be investigated across dichotomised age categories (<65 and ≥65), and then further explored in narrower age categories (18-45, 45-54, 55-64, 65-74, 75+). Due to the availability of multiple datasets, analysis was expanded compared to the previous chapter to examine whether there are any differences in the validity of the tool self-reported in questionnaires (Keele Aches and Pains Study (KAPS) and Treatment for Aches and Pains Study (TAPS) pilot-baseline) and at point-of-consultation asked by GPs (TAPS pilot-intervention). The baseline and six-month questionnaires for KAPS and TAPS are displayed in Appendices 11 to 14.

5.4 Methods

This section provides overviews of the datasets, study populations and variables used in the analyses. Demographics of the study population from each dataset is given later in the chapter, in Table 5.2. This chapter only reports data from participants who completed the study; participants without six month data were removed.

5.4.1 Datasets and study populations

5.4.1.1 KAPS

The KAPS dataset is from the cohort study that formed the first workpackage of the STarT MSK programme. Participants were identified from GP records as having consulted recently for musculoskeletal pain and sent a paper questionnaire, with follow up questionnaires sent after two and six months. Stratification into risk subgroups using the STarT MSK tool was

calculated from the self-reported answers in the baseline questionnaire. At baseline, 1897 participants returned their questionnaire, although once completed STarT MSK scores were taken into account the final number of participants was 1697. Response rate at the six month time point for participants with a full STarT MSK score was 77.8% (n=1320) of the baseline sample.

5.4.1.2 TAPS pilot study

The TAPS pilot study was Workpackage 3 of the STarT MSK programme and recruited 524 participants who consulted their GP for musculoskeletal pain. The pilot study is split into two datasets to allow comparisons between self-reported written answers and answers given verbally in response to a GP in a consultation.

TAPS pilot-baseline

The first dataset is that of all participants in the pilot study, regardless of whether they were in the control or intervention arms. All participants received a paper baseline questionnaire in the post around two weeks after their consultation, with follow-up text or postcards collecting primary outcome data monthly for six months, before completing the final six-month questionnaire. Stratification into risk subgroups using the STarT MSK tool was calculated from the self-reported answers in the baseline questionnaire. Of the 524 participants who completed the baseline questionnaire, the response rate at the six month time point was 91.0% (n=477).

TAPS pilot-intervention

The second dataset from the pilot study is that of participants who were in the intervention arm only. The only difference between this population and the TAPS pilot-baseline population is that stratification into risk subgroups using the STarT MSK tool was calculated from answers given verbally in response to the GP asking the tool questions in the consultation. All other outcome variables were collected through the same self-reported

paper questionnaire at six months. Of the 219 participants who completed the baseline questionnaire, the response rate at six months was 90.0% (n=197).

5.4.2 Variables used

The variables used for analysis in this chapter are displayed in Table 5.1. As the TAPS pilot study was a separate package of work than KAPS, different outcome measures were used for a number of variables, resulting in an inability to draw direct comparisons for some variables.

5.5 Analysis plan

Analyses were identical for both the KAPS and TAPS pilot datasets and followed the STarT MSK statistical analysis plan developed for the validity of the tool for the whole population of both datasets but stratified by age, including the sample size calculations to provide power for predictive validity analyses. To ensure that there is enough power, a minimum of 100 participants in each strata are needed, a figure based on previous musculoskeletal pain studies (Hill et al., 2008; Hill et al., 2011). Therefore, main conclusions will be drawn from the analyses performed on participants dichotomised into 'younger adults' (<65) and 'older adults' (>65). Explorative analyses were undertaken in narrower age categories which would not meet the minimum sample size. As the TAPS pilot study had lower recruitment targets than KAPS, to ensure that analyses were somewhat robust, some age categories from the previous chapter were collapsed. Therefore, the age categories used for this explorative analysis were 18-44, 45-54, 55-64, 65-74, 75+. Although this may lose some of the fidelity in differences observed in Chapter Four, this was essential to avoid completely underpowered statistical analyses.

5.5.1 Descriptive statistics

Descriptive statistics explored the characteristics of both populations, through means and standard deviations for continuous variables and proportions for categorical variables. These characteristics were chosen to examine differences based upon the findings from Chapter

Four. The factors examined and the scales used for measurement are displayed in Table 5.1. Pain intensity at baseline and six month follow up are presented for both age-analyses for all datasets by risk subgroup. Furthermore, the proportion of 'yes' responses given by younger and older adults to the STarT MSK Tool questions are reported in Table 5.3.

5.5.2 Predictive and discriminant validity

Validity of a prognostic tool or measure is assessed through predictive and discriminant validity; predictive validity is the tool's ability to accurately predict future outcomes, whilst discriminant validity is the tool's ability to correctly distinguish between subgroups of people (Jensen, 2003). An overview of the different types of validity that can be used in the assessment of prognostic tools was given in Chapter Two (see 2.3) For the STarT MSK tool, validity will be ascertained through the tool's ability to predict high pain intensity (rated ≥ 5 on a 0 – 10 scale) at six months, and subsequently group participants into the appropriate risk subgroups (Campbell et al., 2016).

5.5.2.1 Predictive validity

Logistic and linear regression was used to investigate the predictive validity of the STarT MSK Tool. Linear regression was used to predict pain intensity as a continuous outcome (0 – 10) and logistic regression was used to predict the pain dichotomised into 'high' (≥ 5) and 'low' (< 5). The r^2 statistic from these analyses reports the proportion of variance in the outcome explained by the predictors. Generally, the closer to one the r^2 value is, the more accurately predicted the outcome is by the predictors, however it is important to consider that a predictor can be important but not necessarily account for a large amount of the variance. In logistic regression, there are multiple versions of r^2 that can be calculated; Nagelkerke's r^2 is often used for generalised linear models (Steyerberg et al., 2010), and is therefore used in this analysis. With each one-point increase in the STarT MSK Tool scores, linear regression presents the point increase in pain intensity on a 0-10 scale, and logistic

Table 5.1: Variables analysed, and scales used

Variable	Measurement	
	KAPS	TAPS pilot
Age	Mean (SD) Dichotomised: <65 and ≥65 Categorised: 18-45, 45-54, 55-64, 65-74, 75+	Mean (SD) Dichotomised: <65 and ≥65 Categorised: 18-45, 45-54, 55-64, 65-74, 75+
Gender	Self-reported	Self-reported
Pain site	Self-reported	GP coded
Risk stratification	STarT MSK tool (0 – 12): 0 – 4 = low risk; 5 – 8 = medium risk; 9 – 12 = high risk	STarT MSK tool (0 – 12): 0 – 4 = low risk; 5 – 8 = medium risk; 9 – 12 = high risk
Pain intensity	Numerical rating scale 0 (no pain) – 10 (pain as bad as could be), average of three time points	Numerical rating scale 0 (no pain) – 10 (pain as bad as could be)
Pain bothersomeness	Numerical rating scale (NRS; 0 – 10)	One item: 'In the last two weeks, have you been bothered a lot by your pain?' Yes/No
Physical function	Physical component score (SF-36) (0 – 100)	Neck Disability Index (NDI) Roland Morris Disability Questionnaire (RMDQ; back) Knee injury and Osteoarthritis Outcome Score (KOOS-12) Shoulder Pain and Disability Index (SPADI) SF-12 PCS
Comorbidities	Self-reported comorbidity count (Mean, SD)	Self-reported comorbidity count (Mean, SD)
Pain self-efficacy	Pain Self-Efficacy Questionnaire (PSEQ) (0 – 60)	Single item NRS 'confidence to manage pain' (0 – 10)
Mental health	Mental Component Score (MCS) (0 – 100)	Single item NRS: 'level of distress' (0 – 10)
Health literacy	1-item screener, dichotomised into 'low' and 'high'	1-item screener, dichotomised into 'low' and 'high'
Quality of life	EURO-QOL-5D-3L (-0.594 – 1)	EURO-QOL-5D-3L (-0.594 – 1)

regression presents the odds of being categorised into having 'high' pain (≥ 5). Additionally, the odds of having high pain intensity at six months for the medium and high risk subgroups in comparison to the low risk subgroup will also be presented.

5.5.2.2. Discriminant validity

The Hosmer-Lemeshow test measures the calibration of a predictive model; whether the observed risk matches the predicted risk calculated by the model. Good calibration and accurate prediction are denoted by a non-significant chi square distribution, meaning that the observed and expected values do not significantly differ (Steyerberg et al., 2010).

Classification tables will display the number of participants in each subgroup that were predicted and observed to have high (≥ 5) and low pain (< 5) intensity, to ascertain the proportion correctly predicted and subgrouped by the STarT MSK Tool. This analysis also uses the area under the receiver operating characteristic (ROC) curve analysis, which shows how well a tool discriminates between subgroups of people. This is calculated by plotting the sensitivity (probability of the model correctly predicting an observation as 'positive') and specificity (probability of the model correctly predicting an observation as 'negative') (Hanley & McNeil, 1982). A model with high discrimination ability will have high sensitivity and specificity, although 100% for both is unattainable. For prognosis research, the area under the ROC curve represents the probability that a randomly selected individual is identified and assigned to the correct outcome category (e.g. diseased/non-diseased). For the analysis in this chapter, this is the ability of the STarT MSK Tool's ability to correctly identify participants with high pain intensity (≥ 5) at six months. As the statistic is a probability, scores range from 0 – 1, with 0.5 representing random chance, and 1 indicating perfect classification. Values of area under the curve statistic are categorised as follows: excellent (.90 – 1.0); good (.80 – .89); fair (.70 – .79); moderate (.60 – .69) and fail (.50 – .59) (Shapiro, 1999; Steyerberg et al., 2010).

5.5.3 Predictor variables

The baseline total score of the STarT MSK tool (zero to twelve) was used as the predictor variable for all analyses. In all datasets, pain intensity was assessed as both a continuous (zero to 10) and dichotomous outcome (<5 categorised as 'low pain', and ≥ 5 categorised as 'high pain').

5.5.4 Outcome measures

The primary outcome used to test the validity of the StarT MSK Tool was pain intensity at six months post-consultation, self-reported on a 0 – 10 numerical rating scale. In the development of the tool in the KAPS dataset, the primary outcome for the STarT MSK Tool validity was physical function, as measured using the SF-36 Physical Component Score. However, in TAPS, physical function was recorded using pain-site specific questionnaires, and could only be used as an outcome if standardised scores were computed. Therefore, to allow comparisons between the datasets, the predictive validity of the tool in this chapter was only assessed for pain intensity.

5.6 Demographic results

Descriptive overviews of selected patient demographics at baseline for the KAPS, TAPS pilot baseline, and TAPS pilot intervention populations are given in Table 5.2. There were no differences in gender split, mean age, age category split, pain duration, pain bothersomeness, comorbidity count and quality of life between the three populations. However, there were some differences observed in pain and mental health factors between populations.

In relation to pain, pain intensity scores were higher in the two TAPS populations compared to the KAPS population, whilst the proportions of pain sites reported differed significantly.

Table 5.2: Demographics of each dataset

Demographics	KAPS <i>Self-report</i> (n=1320)	TAPS baseline <i>Self-reported questionnaire</i> (n=484)	TAPS intervention <i>Recorded at point of consultation</i> (n=197)
	Baseline	Baseline	Baseline
Female % (n)	59.3 (783)	59.7 (289)	58.4% (115)
Age Mean (SD)	59.09 (14.9)	61.12 (14.75)	60.89 (14.43)
Age split %			
<65	60.8 (803)	54.8 (265)	54.8 (108)
≥65	39.2 (517)	45.2 (219)	45.2 (89)
Age categories % (n)			
18-44	16.4 (217)	12.6 (61)	13.2 (26)
45-54	19.4 (256)	18.6 (90)	16.2 (32)
55-64	25.0 (330)	23.6 (114)	25.4 (50)
65-74	24.1 (318)	25.4 (123)	27.4 (54)
75+	15.1 (199)	19.8 (96)	17.8 (35)
Risk stratification % (n)			
Low	25.3 (334)	30.0 (145)	37.6 (74)
Medium	42.7 (563)	55.6 (269)	52.3 (103)
High	32.0 (423)	14.5 (70)	10.2 (20)
Pain duration %			
<6 months	42.0 (554)	40.3 (195)	43.7 (86)
≥6 months	58.0 (766)	59.7 (289)	56.3 (111)
Pain site % (n)			
Neck	3.0 (40)	11.8 (57)	12.7 (25)
Back	21.3 (281)	28.9 (140)	32.0 (63)
Shoulder	5.7 (75)	23.6 (114)	22.3 (44)
Knee	19.5 (258)	27.9 (135)	27.4 (54)
Multisite	50.5 (666)	7.9 (38)	5.6 (11)
Self-reported comorbidity count Mean (SD)	1.15 (1.04)	1.11 (1.13)	0.98 (1.01)
Low health literacy % (n)	14.5 (191)	7.6% (37)	6.7% (13)

Table 5.2: Demographics of each dataset (continued)

Demographics	KAPS <i>Self-report</i> (n=1320)		TAPS baseline <i>Self-reported questionnaire</i> (n=484)		TAPS intervention <i>Recorded at point of consultation</i> (n=197)	
	Baseline	Six month follow-up	Baseline	Six month follow-up	Baseline	Six month follow-up
Pain bothersomeness Mean (SD); NRS 0-5	3.60 (.97)	3.46 (.96)	3.46 (.96)	2.73 (1.09)	3.40 (.92)	2.72 (1.16)
Physical function Mean (SD)						
SF-36 Physical Component	36.26 (10.19)	38.71 (11.36)	N/A	N/A	N/A	N/A
Neck pain – NDI	N/A	N/A	16.01 (8.10)	9.94 (9.25)	13.91 (6.60)	8.07 (5.94)
Back pain – RMDQ	N/A	N/A	9.61 (5.49)	6.55 (6.11)	9.56 (5.49)	6.79 (6.50)
Knee pain – KOOS-12	N/A	N/A	43.34 (21.44)	53.34 (23.66)	45.13 (22.26)	52.42 (24.66)
Shoulder pain – SPADI	N/A	N/A	46.28 (24.13)	30.58 (27.33)	43.15 (24.68)	27.79 (28.02)
Multisite pain – SF-12	N/A	N/A	34.11 (9.68)	34.98 (11.65)	33.98 (9.36)	35.42 (14.36)
Mental health Mean (SD) *MCS-SF36 ↑ = improvement **NRS 0-10 ↓ = improvement	44.61 (13.01)*	47.77 (1.13)*	5.58 (2.63)**	3.64 (2.95)**	5.50 (2.58)**	3.66 (3.11)**
Self-efficacy Mean (SD) *PSEQ **NRS 0-10	38.31 (15.68)*	40.11 (16.09)*	5.47 (2.64)**	6.63 (2.81)**	5.49 (2.64)**	6.54 (3.00)**
Quality of life Mean (SD)	.57 (.26)	.56 (.24)	.56 (.24)	.64 (.25)	.57 (.25)	.65 (.26)
For all pain bothersomeness, higher (↑) scores indicate worsening of conditions. For all measures of physical function, self-efficacy, and quality of life, higher (↑) scores indicate improvement. For mental health, in the KAPS dataset higher (↑) scores in the MCS-SF12 indicate improvement, whilst for both TAPS datasets, lower (↓) scores in the NRS indicate improvement.						

Patients self-reporting in the KAPS population reported much higher proportions of multisite pain (50.5%) than those reporting at point of consultation (7.9%); and much higher proportions of neck pain (11.8%) and shoulder pain (23.6%) than in KAPS (3.0% and 5.7% respectively). However, these results should be taken with caution as this is likely to be a reflection of the different ways in which pain site was captured in both studies; in the KAPS dataset patients self-reported their pain on an image of a body mannequin, whereas it was GPs who coded pain site in the TAPS pilot.

Mental health scores were slightly better for the KAPS population than the TAPS population, with scores slightly under the mid-point in KAPS and slightly over mid-point for TAPS, although these scales differed. Self-efficacy and quality of life scores were consistent across populations, with the average scores just over the mid-point for both populations. The proportions of patients reporting low health literacy were lower in the TAPS datasets than in the KAPS dataset.

5.7 Results for dichotomised age analyses

This section presents the results of the validity analyses for older and younger adults.

5.7.1 STarT MSK Tool answers

The responses given to the questions in the STarT MSK tool stratified by dataset and age are presented in Table 5.3. It is important to note that the final version of the STarT MSK Tool was produced after the pilot study, in response to issues identified. Therefore, in the TAPS-intervention dataset, the items 'pain self-management' and 'emotional wellbeing' are reported from participant self-reported answers in the paper baseline questionnaire, not asked by the GP, as they were not included in the version of the tool used in the pilot study.

Table 5.3: STarT MSK Tool proportions of 'yes' answers

STarT MSK Tool Item	KAPS (n=1320)		TAPS pilot-baseline (n=484)		TAPS pilot-intervention (n=197)	
	<65 (n=803)	≥65 (n=517)	<65 (n=265)	≥65 (n=219)	<65 (n=108)	≥65 (n=89)
<u>Average pain intensity (Mean (SD))</u> : On average, how intense was your pain?	5.28 (2.36)	5.14 (2.32)	6.32 (2.12)	5.89 (2.45)	6.59 (1.80)	6.46 (2.12)
<u>Pain self-management</u> : Do you often feel unsure about how to manage your pain condition?	57.0	49.5	26.8	24.2	26.9*	23.6*
<u>Pain impact</u> : Over the last two weeks, have you been bothered a lot by your pain?	79.0	69.6	55.8	43.8	62.0	48.3
<u>Walking short distances only</u> : Have you only been able to walk short distances because of your pain?	52.4	57.6	49.1	56.6	41.7	47.2
<u>Pain elsewhere</u> : Have you had troublesome joint or muscle pain in more than one part of your body?	75.5	76.4	71.7	70.3	50.0	43.8
<u>Long-term expectations</u> : Do you think your condition will last a long time?	79.2	75.0	83.8	80.4	70.4	68.5
<u>Comorbidity</u> : Do you have other important health problems?	37.9	55.1	35.8	51.1	27.8	36.0
<u>Emotional wellbeing</u> : Has pain made you feel down or depressed in the last two weeks?	66.3	52.8	29.1	18.3	26.9*	18.0*
<u>Fear of harm</u> : Do you feel it is unsafe for a person with a condition like yours to be physically active?	31.9	24.8	21.5	27.9	22.2	30.3
<u>Pain duration</u> : Have you had your current pain problem for 6 months or more?	58.0	58.0	59.6	59.8	55.6	57.3

*Calculated from the baseline questionnaire, not from the GP consultation.

Across all datasets, mean pain intensity and the proportion of participants reporting that their pain had last six months or more and expected their condition to last a long time was similar; these were also similar between the younger and older adult groups in each dataset.

A number of differences were observed between the KAPS and TAPS-baseline datasets which were the same for younger and older adults. For both pain self-management and emotional wellbeing, there were large drops in the proportions of participants responding 'yes'. The proportions of participants answering these questions at point-of-consultation was not available. There was also a drop in the proportion of both younger and older adult participants reporting that they had been bothered a lot by their pain between KAPS and TAPS datasets.

Furthermore, differences were observed between the TAPS-baseline and TAPS-intervention datasets. Fewer younger and older adults reported having other important health problems when in a consultation compared to self-reported in a questionnaire; although this drop between datasets was larger for older adults. Conversely, there were much lower proportions of pain reported elsewhere when in a GP consulted compared to self-reported in a questionnaire; however again the drop was larger for older adults. Additionally, there was a small drop in walking short distances for both older and younger adults between datasets.

5.7.2 Risk stratification

Table 5.4 shows the proportion of younger and older adults stratified into low, medium and high risk subgroups across the datasets. The proportions of patients stratified into low, medium and high risk subgroups varied between KAPS and TAPS questionnaire populations; with more patients subgrouped as high risk in the KAPS population (32.0%) than TAPS (14.5%). This was offset by a higher proportion of patients subgrouped as medium risk in the TAPS pilot-baseline than KAPS (55.6% vs 42.7%). The TAPS pilot-intervention dataset had the lowest proportion of patients grouped into high risk and the

highest proportion of patients grouped into low risk. This was especially evident for older adults, of whom only 9.0% were categorised as high risk compared to 16.4% in the TAPS pilot-baseline dataset and 29.2% in the KAPS dataset.

Table 5.4: Risk stratification at baseline

Risk subgroup	KAPS			TAPS pilot-baseline			TAPS pilot-intervention		
	Low	Med	High	Low	Med	High	Low	Med	High
All	25.3 (334)	42.7 (563)	32.0 (423)	30.0 (145)	55.6 (269)	14.5 (70)	37.6 (74)	52.3 (103)	10.2 (20)
<65 % (n)	24.4 (196)	41.7 (335)	33.9 (272)	29.4 (78)	57.7 (153)	12.8 (34)	34.3 (37)	54.6 (59)	11.1 (12)
≥65 % (n)	26.7 (138)	44.1 (228)	29.2 (151)	30.6 (67)	53.0 (116)	16.4 (36)	41.6 (37)	49.4 (44)	9.0 (8)

5.7.3 Validity of the STarT MSK Tool

The results of the validity analyses are presented below: Table 5.5 shows the change in pain intensity from baseline to six month and the proportions of participants grouped into ‘high’ and ‘low’ pain intensity; Table 5.6 shows the predictive validity results; Table 5.7 shows the percentage of correct classifications predicted by the STarT MSK Tool; Table 5.8 displays the discriminant validity results; and Figures 5.1, 5.2 and 5.3 show the ROC curves.

5.7.3.1 Pain intensity

Table 5.5 shows the change in mean pain intensity between baseline and six month follow up and the proportion of participants grouped as having ‘high’ (≥5) or ‘low’ (<65) pain intensity at six months. For both younger and older adults, pain intensity was higher at baseline in the KAPS dataset than the TAPS datasets. Across all datasets, younger adults reported greater reductions in mean pain intensity from baseline to six month follow up apart from the high risk subgroups of the two TAPS datasets, in which older adults reported a greater average reduction, potentially due older adults’ higher baseline scores. For pain split at six months, there were similar proportions of younger and older adults categorised into ‘low’ and ‘high’ pain apart from:

Table 5.5: Descriptive pain intensity scores

		Younger adults <65					Older adults (≥65)				
Dataset	Risk subgroup	Pain intensity (Mean, SD)			Pain split (%)		Pain intensity (Mean, SD)			Pain split (%)	
		Baseline	Six months	Change	Low	High	Baseline	Six months	Change	Low	High
KAPS	Low	2.73 (1.64)	1.73 (1.97)	-1.00	88.0	12.0	2.82 (1.54)	2.11 (1.96)	-0.71	86.8	13.2
	Medium	5.34 (1.72)	4.03 (2.46)	-1.31	54.1	45.9	5.32 (1.76)	4.17 (2.39)	-1.15	54.9	45.1
	High	7.24 (1.55)	6.26 (2.33)	-0.98	18.2	81.8	7.07 (0.79)	6.38 (2.35)	-0.69	17.7	82.3
TAPS pilot baseline	Low	4.64 (1.93)	2.39 (2.50)	-2.25	81.2	18.8	4.06 (2.28)	2.68 (2.31)	-1.38	80.3	19.7
	Medium	6.82 (1.80)	4.34 (2.76)	-2.48	54.3	45.7	6.29 (2.12)	4.44 (2.73)	-1.85	50.9	49.1
	High	7.91 (1.38)	6.48 (2.81)	-1.43	20.7	79.3	7.94 (1.26)	6.26 (3.04)	-1.68	32.3	67.7
TAPS pilot intervention	Low	5.04 (1.74)	2.30 (2.16)	-2.74	89.2	10.8	4.92 (1.86)	3.14 (2.67)	-1.78	70.3	29.7
	Medium	7.25 (1.17)	4.07 (2.83)	-3.18	57.6	42.4	7.30 (1.50)	4.61 (3.02)	-2.69	50.0	50.0
	High	8.17 (1.12)	6.67 (2.35)	-1.50	25.0	75.0	9.00 (0.76)	6.88 (2.85)	-2.12	25.0	75.0

Table 5.6: Predictive validity results

		Linear regression					Logistic regression					
Dataset	Age	Mean	r ²	Unstandardised B	Standard error	Sig	r ² (nag)	Hosmer-Lemeshow	Exp(B)	95% CI		Sig
KAPS	<65	4.22	.437	.643	.026	<.001	.448	.103	1.760	1.623	1.908	<.001
	≥65	4.27	.404	.596	.032	<.001	.428	.567	1.714	1.554	1.890	<.001
TAPS pilot baseline	<65	4.03	.200	.554	.072	<.001	.202	.675	1.470	1.284	1.682	<.001
	≥65	4.15	.255	.586	.071	<.001	.227	.383	1.482	1.287	1.706	<.001
TAPS pilot POC	<65	3.75	.216	.536	.099	<.001	.237	.230	1.524	1.236	1.879	<.001
	≥65	4.20	.135	.437	.118	<.001	.106	.950	1.269	1.060	1.520	.009

- In the TAPS pilot-baseline dataset, in the high risk subgroup the proportion of younger adults reporting high pain intensity was 11% greater than older adults.
- In the TAPS pilot-intervention dataset, in the low risk subgroup, the proportion of older adults reporting high pain intensity was 19% greater than younger adults.

5.7.3.2 Predictive validity

The predictive validity results are displayed in Table 5.6. In the KAPS dataset, the STarT MSK Tool explained a good amount of variance in six month pain intensity scores for both younger and older adults, with the non-significant Hosmer-Lemeshow statistics showing that there was good calibration. However, the predictive validity decreased in the two TAPS datasets, the amount of variance accounted for by the Tool reduced markedly, and was particularly low for older adults in the TAPS pilot-intervention dataset. This is further evidenced as the odds of having high pain intensity in six months with every one point increase in the Tool reduced from the KAPS to TAPS pilot datasets; and was non-significant for older adults in the TAPS pilot-intervention.

5.7.3.3 Discriminant validity

The results of the discriminant validity analyses are shown in Tables 5.7, 5.8, 5.9 and Figures 5.1, 5.2 and 5.3. Overall, whilst the STarT MSK Tool had good discriminant validity for both younger and older adults in the KAPS dataset, it was reduced in the TAPS datasets and was particularly poor at point of consultation. As shown in Table 5.7, the tool was worse at classifying both older and younger adults into having 'high' pain intensity at six month follow up in TAPS pilot-baseline dataset than the KAPS dataset. The tool was then especially poor for younger adults at point of consultation, with only 39.5% of participants having high pain correctly predicted. The reduction in discriminant validity is also shown through the odds ratios displayed in Table 5.9. In the KAPS dataset, there were increased odds of having high pain intensity at six months for both younger and older adults in the medium and high risk subgroups in comparison to the low risk subgroup.

Table 5.7: Classification of high and low pain split

	Age	Pain split at six months	KAPS			TAPS pilot-baseline			TAPS pilot-intervention		
			Predicted		% Correct	Predicted		% Correct	Predicted		% Correct
			Low pain	High pain		Low pain	High pain		Low pain	High pain	
Observed	<65	Low pain	303	83	78.5	98	40	71.0	64	6	91.4
		High pain	99	277	73.7	42	58	58.0	23	15	39.5
	≥65	Low pain	181	75	70.7	90	27	76.9	36	14	72.0
		High pain	45	182	80.2	36	50	58.1	18	21	53.8

Table 5.8: Discriminant validity results

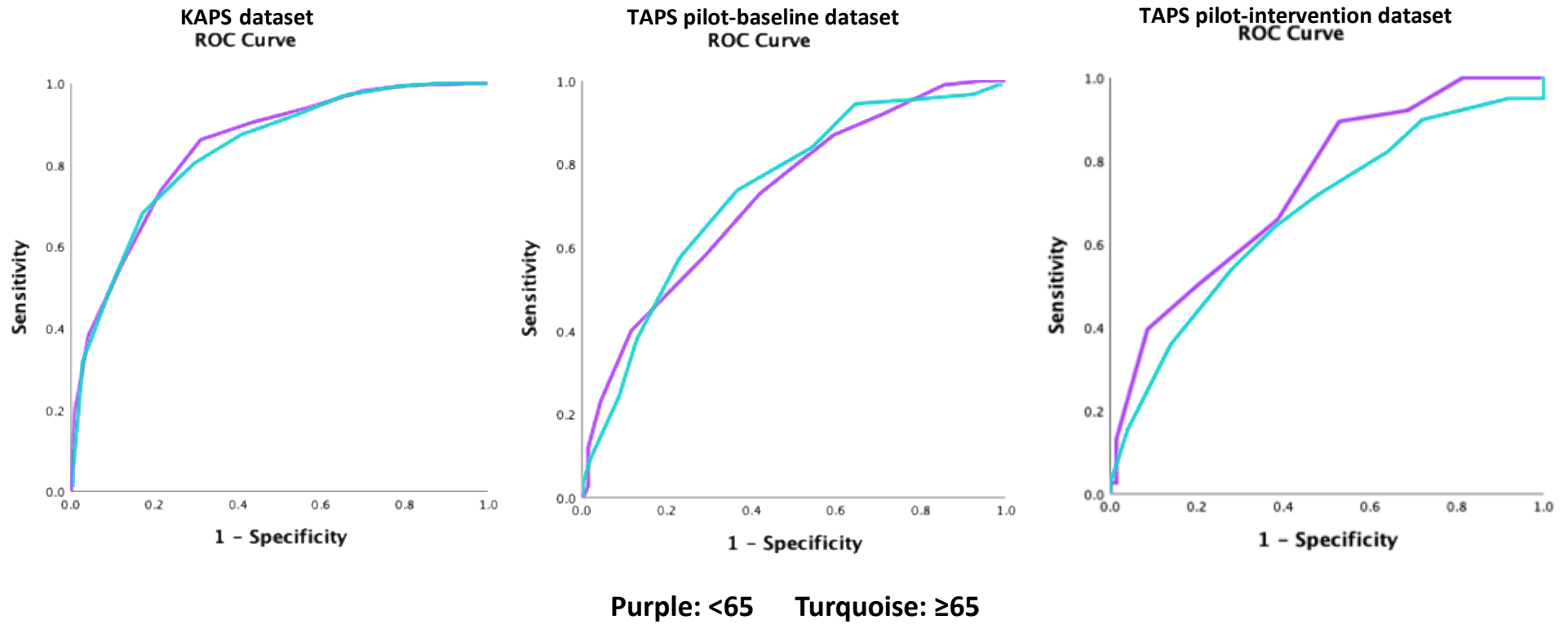
Dataset	Age	Area	Standard Error	95% CI	
				Lower	Upper
KAPS	<65	.842	.014	.814	.869
	≥65	.834	.018	.799	.870
TAPS pilot baseline	<65	.724	.033	.660	.789
	≥65	.741	.035	.673	.809
TAPS pilot POC	<65	.741	.048	.646	.836
	≥65	.671	.058	.557	.785

Table 5.9: Odds ratios by dataset and <65/≥65 age categories

Dataset	Age	Risk subgroup	Odds ratio	95% CI		Sig
				Lower	Upper	
KAPS	<65	Medium	6.20	3.81	10.10	<0.01
		High	32.87	19.15	56.42	<0.01
	≥65	Medium	5.40	3.06	9.51	<0.01
		High	30.42	15.76	58.73	<0.01
TAPS pilot baseline	<65	Medium	3.63	1.82	7.23	<0.01
		High	16.51	5.60	48.74	<0.01
	≥65	Medium	3.93	1.92	8.04	<0.01
		High	8.56	3.26	22.52	<0.01
TAPS pilot intervention	<65	Medium	.*	-	-	-
		High	.543	.138	2.14	.383
	≥65	Medium	.212	.043	1.04	.056
		High	.794	.165	3.81	.773

*odds ratios unable to be produced due to sparse data

Figures 5.1, 5.2 and 5.3: ROC Curves



In particular, both younger and older adults in the high risk subgroup were over 30 times more likely to have high pain than the low risk subgroup, although there were wide confidence intervals. In the TAPS pilot-baseline database, odds ratios for the medium risk subgroup were similar between younger and older adults, but in the high risk subgroup the odds for younger adults were double that of older adults (16.51 vs 8.56); although again there were wide confidence intervals indicating uncertainty in the results. In the TAPS pilot-intervention dataset, the odds ratios were non-significant for younger and older adults in both the medium and high risk subgroups, with the confidence intervals crossing 1, indicating that the STarT MSK tool had no association with high pain intensity at six months.

The ROC curves displayed in Figures 5.1, 5.2 and 5.3 display the reduction in discriminant validity across datasets; whilst the tool had good discrimination in KAPS (results between 0.80 and 0.89); this decreased to only moderate discrimination in TAPS pilot-baseline (results between 0.72 and 0.74); and for older adults in the TAPS pilot-intervention dataset the tool demonstrated only fair discrimination (0.67).

5.8 Results by age categories

This section will explore the validity of the STarT MSK Tool through the same methods as the previous section, but with participants split into narrower age categories. It is important to note that this analysis is exploratory and results should be interpreted with caution due to small numbers in the high risk categories for

5.8.1 STarT MSK Tool answers

The proportion of participants answering 'yes' to the STarT MSK Tool questions split by age category are given in Table 5.10. In addition to the descriptions given above for the dichotomised age groups, analysis by narrower age categories shows that across all datasets, the proportion of participants reporting that their pain bothered them a lot and had an impact upon emotional wellbeing was lowest in the 55-64, 65-74 and 75+ age categories;

Table 5.10: Proportion of 'yes' responses to the STarT MSK Tool questions by age category

STarT MSK Tool Item	KAPS (n=1320)					TAPS pilot-baseline (n=484)					TAPS pilot-intervention (n=197)				
	18-44	45-54	55-64	65-74	75+	18-44	45-54	55-64	65-74	75+	18-44	45-54	55-64	65-74	75+
<u>Average pain intensity (Mean (SD))</u> : On average, how intense was your pain?	5.02 (2.41)	5.36 (2.31)	5.39 (2.37)	5.25 (2.30)	4.97 (2.37)	6.39 (2.00)	6.92 (2.11)	5.81 (2.07)	5.96 (2.48)	5.80 (2.42)	6.65 (1.50)	7.34 (1.58)	6.08 (1.92)	6.57 (2.13)	6.29 (2.12)
<u>Pain self-management</u> : Do you often feel unsure about how to manage your pain condition?	53.5	61.7	55.8	51.9	45.7	29.5	27.8	24.6	26.8	20.8	30.8*	31.3*	22.0*	20.4*	28.6*
<u>Pain impact</u> : Over the last two weeks, have you been bothered a lot by your pain?	76.5	80.9	79.1	72.0	65.8	59.0	70.0	43.0	44.7	42.7	65.4	68.8	56.0	50.0	45.7
<u>Walking short distances only</u> : Have you only been able to walk short distances because of your pain?	52.5	47.3	56.4	54.4	62.8	39.3	55.6	49.1	53.7	60.4	30.8	46.9	44.0	48.1	45.7
<u>Pain elsewhere</u> : Have you had troublesome joint or muscle pain in more than one part of your body?	65.4	78.1	80.0	78.9	72.4	68.9	80.0	66.7	69.1	71.9	46.2	56.3	48.0	46.3	40.0
<u>Long-term expectations</u> : Do you think your condition will last a long time?	75.1	79.3	81.8	78.0	70.4	82.0	82.2	86.0	80.5	80.2	65.4	75.0	70.0	64.8	74.3

Table 5.10 (continued): Proportion of 'yes' responses to the STarT MSK Tool questions by age category

STarT MSK Tool Item	KAPS (n=1320)					TAPS pilot-baseline (n=484)					TAPS pilot-intervention (n=197)				
	18-44	45-54	55-64	65-75	75+	18-44	45-54	55-64	65-75	75+	18-44	45-54	55-64	65-75	75+
<u>Comorbidity</u> : Do you have other important health problems?	33.2	32.4	45.2	55.3	54.8	24.6	35.6	42.1	52.0	50.0	15.4	37.5	28.0	35.2	37.1
<u>Emotional wellbeing</u> : Has pain made you feel down or depressed in the last two weeks?	68.7	66.8	64.2	55.3	48.7	39.3	37.8	16.7	17.1	19.8	38.5*	37.5*	14.0*	13.0*	25.7*
<u>Fear of harm</u> : Do you feel it is unsafe for a person with a condition like yours to be physically active?	39.2	28.1	30.0	22.3	28.6	26.2	16.7	22.8	25.2	31.3	23.1	25.0	20.0	33.3	25.7
<u>Pain duration</u> : Have you had your current pain problem for 6 months or more?	49.8	64.1	58.8	59.4	55.8	60.7	51.1	65.8	64.2	54.2	57.7	37.5	66.0	63.0	48.6

*Calculated from the baseline questionnaire, not from the GP consultation

particularly in the TAPS pilot-baseline and pilot-intervention datasets. Conversely, the 75+ age group had the highest proportions of participants who reported having other important comorbidities and difficulty walking.

Across all datasets, the proportions of participants reporting pain duration over six months and fear of being physically active was mixed across age categories. For example, for fear of harm, the proportion of participants in the 65-74 age category responding 'yes' was the lowest in the KAPS dataset but highest in the TAPS pilot-intervention dataset. Similarly, the 45-54 age category reported the highest proportion of participants experiencing pain for over six month in the KAPS dataset, but the lowest proportion in the TAPS pilot-intervention dataset.

5.8.2 Risk stratification

The proportions of participants stratified into each risk subgroup in each dataset is displayed in Table 5.11.

Table 5.11: Risk stratification (% , n)

	KAPS <i>n=1320</i>			TAPS pilot baseline <i>n=484</i>			TAPS pilot-intervention <i>n=197</i>		
	Low	Med	High	Low	Med	High	Low	Med	High
All	25.3 (334)	42.7 (563)	32.0 (423)	30.0 (145)	55.6 (269)	14.5 (70)	37.6 (74)	52.3 (103)	10.2 (20)
18-44	28.1 (61)	37.8 (82)	34.1 (74)	34.4 (21)	52.5 (32)	13.1 (8)	34.6 (9)	53.8 (14)	11.5 (3)
45-54	23.4 (60)	44.9 (115)	31.6 (81)	23.3 (21)	58.9 (53)	17.8 (16)	31.3 (10)	50.0 (16)	18.8 (6)
55-64	22.7 (75)	41.8 (138)	35.5 (117)	31.6 (36)	59.6 (68)	8.8 (10)	36.0 (18)	58.0 (29)	6.0 (3)
65-74	25.2 (80)	45.6 (145)	29.2 (93)	31.7 (39)	49.6 (61)	18.7 (23)	38.9 (21)	53.7 (29)	7.4 (4)
75+	29.1 (58)	41.7 (83)	29.1 (58)	29.2 (28)	57.3 (55)	13.5 (13)	45.7 (16)	42.9 (15)	11.4 (4)

The general trend of distribution in risk stratification across the datasets is the same as reported above. However, when looking at the narrower age categories, there are a number of differences that are highlighted. The highest proportions of patients were subgrouped into

medium risk for all age categories in the TAPS datasets, however, for the 18-44 age category more patients were stratified into high risk at in TAPS-intervention than self-report (13.1% to 18.8%); the opposite to all other age categories. On the other hand, there was a notable increase in proportions of low risk patients in the 75+ age category between self-report and point of consultation (29.2% to 45.0%), which appears to be facilitated by a decrease in the proportion of these patients stratified into the medium risk subgroup. The 75+ age category was also unique in reporting equal proportions of patients in the low and medium risk subgroups at point of consultation.

5.8.3 Validity of the STarT MSK Tool

The results of the validity analyses are presented below: Table 5.12 shows the change in pain intensity from baseline to six month and the proportions of participants grouped into 'high' and 'low' pain intensity; Table 5.13 shows the predictive validity results; Table 5.14 shows the percentage of correct classifications predicted by the STarT MSK Tool; Table 5.15 displays the discriminant validity results, and Figures 5.4, 5.5 and 5.6 show the ROC curves.

5.8.3.1 Pain intensity

In each dataset and age category the trends for mean pain intensity across risks were similar and as expected: at both baseline and six month follow up, the lowest mean pain intensity was in the low risk subgroup and the highest was in the high-risk subgroup. All age categories in every dataset experienced an average reduction in pain intensity from baseline to six month follow up, although of varying magnitude. Proportions of high and low pain were as expected in the KAPS dataset (the majority of people in the low risk subgroup would have 'low' pain at six months; the majority of people in the high risk subgroup would have 'high' pain and the medium risk would be relatively evenly split between high and low. However, in the TAPS populations, when analysing across age categories, these proportions varied. For example, in the high-risk 65-74 age category in the TAPS pilot-intervention dataset, the

Table 5.12: Pain descriptives by age category

Age	Risk sub-group	KAPS					TAPS-pilot					TAPS-pilot intervention				
		Pain intensity (Mean, SD)			Pain split (%)		Pain intensity (Mean, SD)			Pain split (%)		Pain intensity (Mean, SD)			Pain split (%)	
		Baseline	Six months	Change	Low	High	Baseline	Six months	Change	Low	High	Baseline	Six months	Change	Low	High
18-44	Low	2.52 (1.62)	1.32 (1.78)	-1.20	91.5	8.5	4.86 (1.80)	2.61 (2.55)	-2.25	77.8	22.2	5.00 (0.71)	3.22 (2.59)	-1.78	77.8	22.2
	Medium	5.08 (1.74)	3.85 (2.54)	-1.23	59.0	41.0	7.03 (1.53)	4.38 (2.68)	-2.65	53.8	46.2	7.57 (1.02)	4.36 (2.82)	-3.21	50.0	50.0
	High	7.02 (1.54)	5.73 (2.51)	-1.29	29.2	70.8	7.88 (1.81)	6.00 (2.58)	-1.88	25.0	75.0	7.33 (0.58)	6.00 (2.65)	-1.33	33.3	66.7
45-54	Low	2.84 (1.52)	2.06 (2.16)	-0.78	80.0	20.0	5.05 (2.44)	2.74 (2.79)	-2.31	73.7	26.3	6.10 (1.52)	1.60 (1.08)	-4.50	100	0.0
	Medium	5.29 (1.79)	4.22 (2.43)	-1.07	49.1	50.9	7.26 (1.72)	4.55 (2.70)	-2.71	53.1	46.9	7.62 (1.20)	4.25 (2.70)	-3.37	62.5	37.5
	High	7.32 (1.43)	6.46 (2.14)	-0.86	13.2	86.8	8.25 (1.00)	7.27 (2.84)	-0.98	13.3	86.7	8.67 (1.21)	7.33 (2.34)	-1.34	16.7	83.3
55-64	Low	2.62 (1.55)	1.82 (1.91)	-0.80	91.7	8.3	4.28 (1.65)	2.06 (2.33)	-2.22	87.5	12.5	4.47 (1.99)	2.22 (2.32)	-2.25	88.9	11.1
	Medium	5.32 (1.67)	3.98 (2.45)	-1.34	55.4	44.6	6.38 (1.88)	4.15 (2.85)	-2.23	55.4	44.6	6.88 (1.13)	3.83 (2.99)	-3.05	58.6	41.4
	High	7.26 (1.64)	6.45 (2.31)	-0.81	15.2	84.8	7.40 (1.51)	5.50 (2.76)	-1.90	30.0	70.0	8.00 (1.00)	6.00 (2.65)	-2.00	33.3	66.7
65-74	Low	3.06 (1.57)	2.39 (1.91)	-0.67	84.8	15.2	4.15 (2.21)	2.13 (1.94)	-2.02	84.6	15.4	4.90 (1.87)	2.62 (2.56)	-2.28	71.4	28.6
	Medium	5.16 (1.74)	3.98 (2.28)	-1.18	58.1	41.9	6.38 (2.22)	4.22 (2.81)	-2.16	54.2	45.8	7.41 (1.48)	4.66 (2.89)	-2.75	48.3	51.7
	High	7.27 (1.73)	6.43 (2.42)	-0.84	18.9	81.1	7.91 (6.26)	6.26 (3.02)	-1.65	31.6	68.4	9.25 (0.96)	6.25 (3.86)	-3.00	50.0	50.0
75+	Low	2.50 (1.45)	1.74 (1.99)	-0.76	89.5	10.5	3.93 (2.42)	3.48 (2.59)	-0.45	74.1	25.9	4.94 (1.91)	3.81 (2.74)	-1.13	68.8	31.3
	Medium	5.46 (1.71)	4.51 (2.53)	-0.95	49.4	50.6	6.20 (2.01)	4.72 (2.62)	-1.48	46.8	53.2	7.07 (1.58)	4.53 (3.36)	-2.54	53.3	46.7
	High	6.73 (1.85)	6.32 (2.26)	-0.41	15.7	84.3	8.00 (1.00)	6.25 (3.22)	-1.75	33.3	66.7	8.75 (0.50)	7.50 (1.73)	-1.25	0.0	100

proportion of participants with high and low was evenly split (see Table 5.12). However, the small numbers in the TAPS datasets split across age categories must be taken into account when considering proportions.

5.8.3.2 Predictive validity

When analysed using narrower age categories, in the KAPS dataset the predictive validity of the STarT MSK Tool was good across all age categories, mirroring the above dichotomised analyses. Similarly in the TAPS pilot-baseline dataset, although the amount of variance predicted was lower and the confidence intervals of the odds ratios wider in all ages, the analyses were all still significant. However, in the TAPS pilot-intervention dataset, the STarT MSK tool did not significantly predict pain intensity at six months for the 18-44 and 75+ age categories, despite being very good for the 45-54 age category.

5.8.3.3 Discriminant validity

The results of the discriminant validity analyses are shown in Tables 5.14, 5.15, 5.16 and Figures 5.4, 5.5 and 5.6. As with the dichotomised analyses, the tool showed good predictive and discriminant validity across all age categories in the KAPS dataset, with high r^2 values for both linear and logistic regression, high percentages of participants classified correctly, significant odds-ratios for participants classified as 'high pain' at six months and very good area under the ROC curve statistics. However, the tool's validity decreased in the TAPS datasets. Specifically, in both TAPS datasets for each age category the STarT MSK tool was consistently worse at correctly identifying people who would have high pain at six months than in the KAPS dataset, especially for the 18-44 and 55-64 age categories. This is represented further in the lower area under the curve statistics (also displayed in Figures 5.4, 5.5 and 5.6) and non-significant odds ratios. For older adults, whilst having similar area under the curve results in the TAPS baseline questionnaire, these were then low for the 65-74 age category, and fair for the 75+ age category in the intervention dataset, as shown b

Table 5.13: Predictive validity statistics

Dataset	Age	Linear regression					Logistic regression					
		Mean pain	r ²	Unstandardised B	Standard error	Sig	r ² (nag)	Hosmer-Lemeshow	Sig	Exp(B)	95% CI	
KAPS	18-44	3.77	.457	.620	.046	<0.01	.409	7.40 (.49)	<0.01	1.636	1.419	1.887
	45-54	4.42	.396	.624	.048	<0.01	.398	2.70 (.91)	<0.01	1.692	1.477	1.939
	55-64	4.36	.450	.667	.041	<0.01	.523	8.95 (.35)	<0.01	2.009	1.725	2.341
	65-74	4.30	.376	.581	.042	<0.01	.393	5.45 (.61)	<0.01	1.674	1.481	1.892
	75+	4.23	.444	.618	.049	<0.01	.488	3.82 (.87)	<0.01	1.791	1.518	2.113
TAPS pilot baseline	18-44	3.85	.141	.444	.162	.009	.154	3.36 (.76)	.026	1.390	1.041	1.855
	45-54	4.63	.266	.637	.118	<0.01	.211	3.42 (.84)	.001	1.459	1.172	1.816
	55-64	3.65	.157	.498	.113	<0.01	.202	3.14 (.79)	<0.01	1.504	1.211	1.868
	65-74	3.85	.304	.628	.089	<0.01	.235	6.75 (.46)	<0.01	1.482	1.233	1.782
	75+	4.55	.190	.511	.115	<0.01	.212	14.47 (.03)	<0.01	1.475	1.186	1.835
TAPS pilot POC	18-44	4.15	.147	.417	.205	.054	.137	3.74 (.59)	.118	1.333	.930	1.910
	45-54	4.00	.465	.843	.165	<0.01	.504	5.74 (.33)	.004	2.246	1.295	3.895
	55-64	3.38	.129	.417	.156	.011	.175	3.38 (.64)	.020	1.424	1.057	1.918
	65-74	3.98	.167	.500	.155	.002	.071	1.91 (.97)	.096	1.220	.965	1.544
	75+	4.54	.102	.360	.186	.062	.168	6.56 (.36)	.042	1.340	1.010	1.776

Table 5.14: Classification of high and low pain by age category and dataset

	Age	Pain split at six months	KAPS			TAPS pilot-baseline			TAPS pilot-intervention		
			Predicted		% Correct	Predicted		% Correct	Predicted		% Correct
			Low pain	High pain		Low pain	High pain		Low pain	High pain	
Observed	18-44	Low pain	90	29	75.6	20	9	69.0	10	5	66.7
		High pain	20	63	75.9	10	9	47.4	6	5	45.5
	45-54	Low pain	79	33	70.5	30	12	71.4	19	2	90.5
		High pain	26	108	80.6	14	27	65.9	3	8	72.7
	55-64	Low pain	120	35	77.4	60	7	89.6	32	2	94.1
		High pain	34	125	78.6	26	14	35.0	12	4	25.0
	65-74	Low pain	130	29	81.8	55	16	77.5	22	9	71.0
		High pain	43	96	69.1	20	26	56.5	11	12	52.2
	75+	Low pain	74	23	76.3	35	11	76.1	12	7	63.2
		High pain	17	71	80.7	16	24	60.0	6	10	62.5

Table 5.15: Discriminant validity statistics by age category

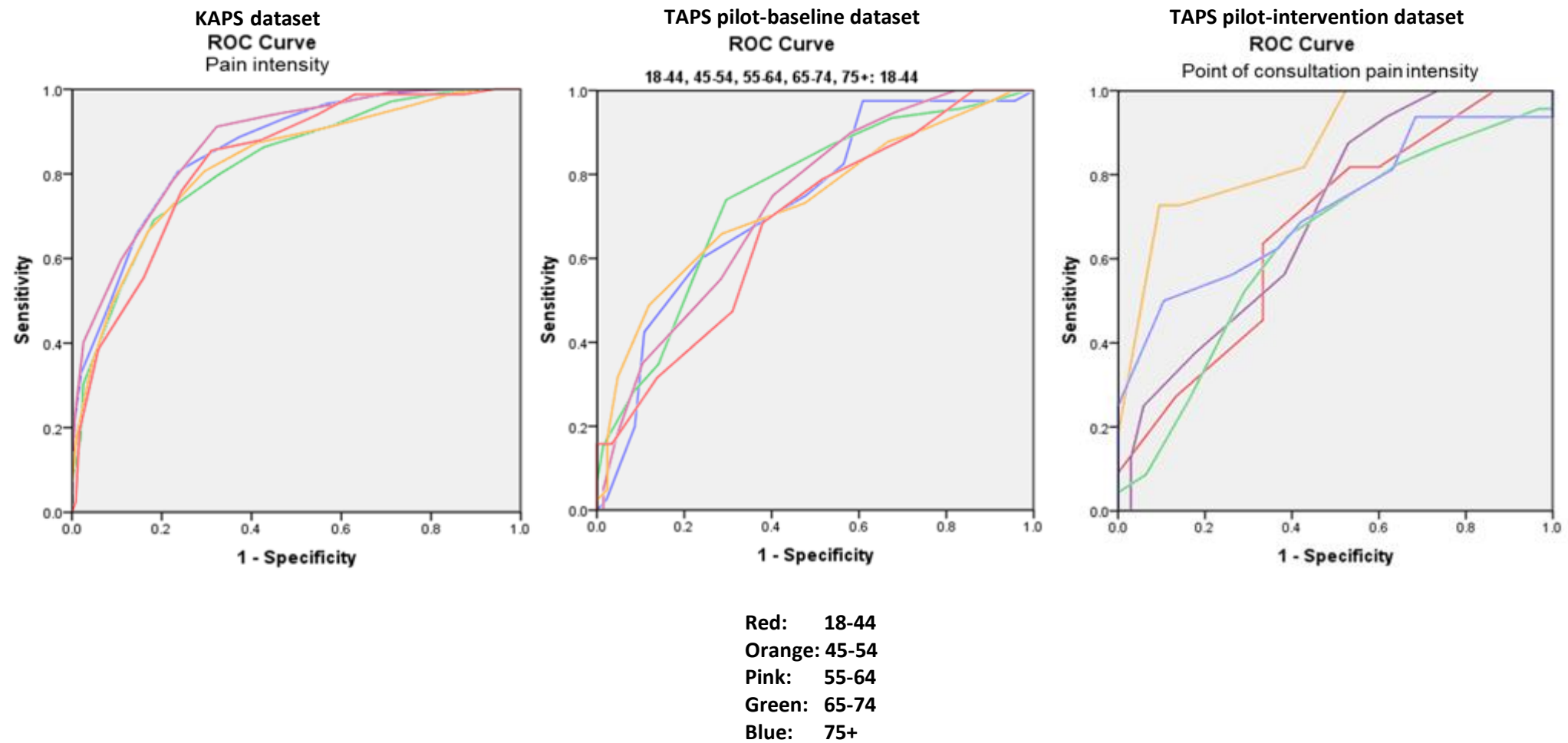
Dataset	Age	Area	Standard Error	95% CI	
				Lower	Upper
KAPS	18-44	.827	.029	.771	.883
	45-54	.822	.026	.771	.874
	55-64	.870	.019	.832	.908
	65-74	.820	.024	.773	.867
	75+	.858	.027	.806	.911
TAPS pilot baseline	18-44	.682	.078	.530	.835
	45-54	.731	.055	.623	.840
	55-64	.732	.048	.637	.826
	65-74	.751	.046	.661	.841
	75+	.732	.054	.626	.839
TAPS pilot POC	18-44	.673	.107	.463	.882
	45-54	.861	.068	.728	.995
	55-64	.703	.074	.558	.849
	65-74	.638	.077	.487	.789
	75+	.720	.089	.545	.896

Table 5.16: Odds ratios for 'high pain' at six months' time compared to the low risk subgroup

Age	Risk subgroup	KAPS				TAPS-pilot				TAPS pilot-intervention			
		Odds ratio	95% CI		Sig	Odds ratio	95% CI		Sig	Odds ratio	95% CI		Sig
			Lower	Upper			Lower	Upper			Lower	Upper	
18-44	Medium	7.51	2.71	20.86	<.001	3.00	0.78	11.60	.111	3.50	0.53	23.14	.194
	High	26.15	9.05	75.53	<.001	10.50	0.84	130.66	.068	7.00	0.40	123.35	.184
45-54	Medium	4.15	1.990	8.65	<.001	2.48	0.77	7.94	.127	-*	-	-	-
	High	26.40	1054	66.11	<.001	18.20	2.99	110.68	.002	-*	-	-	-
55-64	Medium	8.86	3.59	21.89	<.001	5.64	1.77	17.92	.003	5.65	1.09	29.27	.039
	High	61.47	23.02	164.16	<.001	16.33	2.95	90.38	.001	16.00	0.96	267.03	.054
65-74	Medium	4.02	1.98	8.15	<.001	4.64	1.69	12.73	.003	2.68	0.81	8.84	.106
	High	23.98	10.67	53.89	<.001	11.92	3.25	43.77	<.001	2.50	0.28	22.04	.409
75+	Medium	8.72	3.35	22.71	<.001	3.25	1.16	9.13	.026	1.93	.445	8.33	.381
	High	45.69	14.71	141.95	<.001	5.71	1.31	25.03	.021	-*	-	-	-

*odds ratios unable to be produced due to sparse data

Figures 5.5, 5.6 and 5.7: ROC curves by age category for each dataset



the non-significant odds ratios for both age categories. On the other hand, mirroring the predictive validity analyses, the discriminant analyses suggest that the STarT MSK tool was especially effective in the point of consultation dataset for the 45-54 age category; improving upon the self-report values, with higher AUC, percentage of correct classifications. However, in some age categories in the TAPS-intervention dataset, the data was too sparse to create odds ratios: both medium and high-risk subgroups for the 45-54 age category and the high-risk subgroup in the 75+ age category.

5.9 Key findings

The aim of this chapter was to investigate whether the STarT MSK Tool had equal discriminant and predictive validity across all ages, via self-report and at point-of-consultation. This chapter has found that:

- The STarT MSK Tool has good predictive and discriminant validity for both older and younger adults in the KAPS dataset, in which participants completed the Tool through a written questionnaire. It is important to note that this was the development dataset for the tool, and therefore good validity is expected.
- In the TAPS datasets, the predictive and discriminant validity decreased for both younger and older adults. In the TAPS pilot-intervention dataset, the Tool did not significantly predict 'high pain' at six months for older adults.

Exploratory analysis by narrower age categories suggests that:

- The tool performed worst for the 18-44 age category in both TAPS datasets, only moderately accounting for variance in pain and acceptable discriminate validity. This may be due to the combination of multiple age categories in order to gain power for statistical analyses.

- For the 45-54 age category, results suggest that the STarT MSK Tool has good predictive and discriminant validity in both of the TAPS datasets. However, this needs to be further explored as the number of participants in this population is very small; odds ratios for the TAPS pilot-intervention dataset could not be produced due to sparse data.
- For older adults, the STarT MSK Tool showed particularly poor predictive validity for both age categories, and odds ratios were unable to be produced for the high-risk 75+ age category in the TAPS point-of-consultation due to sparse data.

5.10 Implications for the thesis

As the STarT MSK Tool has shown lower validity at point-of-consultation for older adults, it would be useful to investigate the face validity of the tool. This will be achieved through qualitative exploration as presented in the next two chapters. Additionally, due to the differences in validity between self-report and consultation, when sampling for participants for the qualitative research it was decided that it would be prudent to have both self-report and point-of-consultation risk scores in order to gain a representative sample of risk subgroups. The next chapter will be the first chapter presenting the qualitative strand of the thesis, which investigates both older adults' and clinicians' experiences of the consultation in which stratified care was used.

Chapter Six: Interactions within the consultation

6.1 Chapter introduction

The previous two chapters have presented the quantitative results, investigating differences in the clinical profiles between younger and older adults presenting in primary care with musculoskeletal pain; and the validity of the STarT MSK tool in predicting six-month pain intensity outcome across participant age categories.

The next two chapters will present the qualitative findings of this thesis, which explored both clinicians' and older adults' views towards GP consultations in which the STarT MSK tool and recommended matched treatment options were used.

This chapter will firstly present demographic information of the participants who took part in the qualitative research and will then report on the two themes identified in data from both the clinician focus groups and older adult interviews: negotiation and reassurance. Themes were developed inductively from the data (see section 3.6 for further information regarding the analysis process), and will be mapped back onto the research questions in the discussion chapter (Chapter Eight). For reference, the two research questions addressed through qualitative methods were:

- ⇒ What are older adults' and clinicians' experiences of factors that contribute to complexity in musculoskeletal pain?
- ⇒ What do older adults and clinicians see as constituting a good GP consultation for musculoskeletal pain for older people, and what are considered acceptable outcomes?

6.2 Participant overview

Sixteen older adults took part in face-to-face semi-structured interviews. Patients were aged between 67 and 84, with all interviews taking place at participants' homes by their

choice. All participants were White British, and resided in either Staffordshire, Warwickshire or Shropshire, in the United Kingdom. Face-to-face interview length ranged from 38 – 100 minutes (mean 64 minutes). Two of the interviews were dyadic, with the participants' partner present and engaging in the interview. Six participants took part in follow up interviews, which ranged from five to 38 minutes (mean 28 minutes) in length.

Fourteen clinicians took part across the three focus groups in total: 12 GPs and two physiotherapists. Seven clinicians took part in the first focus group, five in the second, and two in the third. Eight participants were male, six were female; and had a wide range of clinical experience, from newly qualified (one week) to 37 years. All focus group participants were involved in the intervention arm of the STarT MSK main trial, had been trained in, and had experience of, using the stratified care approach. The first two focus groups were conducted in Warwickshire, with the third in Shropshire, and lasted between 35 and 47 minutes, and took place within the GP practices.

Selected participant demographics for both patients and clinicians are displayed in Tables 6.1 and 6.2.

Table 6.1: Patient participant demographics

Pseudonym	Age	Sex	Pain site	STarT MSK Tool risk subgroup [score]	Treatment options	Follow up interview?
Harry	82	Male	Shoulder	Low [3]	Advice – verbal & written	Yes
Steven	69	Male	Back	Medium [7]	Advice – written Physio referral	No
George	81	Male	Knee	Low [2]	Advice – verbal & written Advice – OTC medication Referral to MSK interface clinic Physio referral Lifestyle intervention (Slimming World)	No
Hilda	80	Female	Neck	Medium [8]	Advice – verbal & written Physio referral	Yes
Carol	73	Female	Shoulder	Medium [8]	Advice – verbal & written Physio referral	Yes
Karen	67	Female	Shoulder	Medium [7]	Advice – verbal & written Physio referral	Yes
Mark	67	Male	Back	Low [3]	Advice – verbal & written Advice – OTC medication	No
Erin	70	Female	Back	Medium [8]	Advice – verbal & written Physio referral	No
Peter (and Dorothy, wife)	83	Male	Back	High [10]	Advice – verbal Physio referral	No

Table 6.1 (continued): Patient participant demographics

Pseudonym	Age	Sex	Pain site	STarT MSK Tool risk subgroup [score]	Treatment options	Follow up interview?
Marie	67	Female	Multisite	High [9]	Advice – verbal & written Refer to physio	No
Elizabeth	75	Female	Knee	Medium [7]	Advice – verbal & written Opioid medication Refer to physio Refer for imaging	No
Rose	84	Female	Back	Medium [8]	Refer to physio	Yes
Grace	79	Female	Multisite	Medium [5]	Refer to physio	Yes
Susan	67	Female	Shoulder	High [9]	Advice – written Corticosteroid injection Refer for imaging	No
Malcolm (and Patricia, wife)	71	Male	Knee	High [9]	Advice – written Refer to MSK interface clinic Refer to pain management service Refer for imaging	No
Rob	67	Male	Multisite	High [11]	Scan	No

Table 6.2: Focus group participant demographics

Name	Sex	Focus group	Area	Profession	Years' experience
James	Male	1	Warwickshire	GP (research lead)	30
Sunil	Male	1	Warwickshire	GP	16
Priya	Female	1	Warwickshire	GP	20
Matt	Male	1	Warwickshire	GP registrar	5
Yasmin	Female	1	Warwickshire	GP	8
Amelia	Female	1	Warwickshire	GP FY2	2
Alison	Female	1	Warwickshire	Physiotherapist / Pathway lead for MSK outpatients	37
Edward	Male	2	Warwickshire	GP partner	37
Robert	Male	2	Warwickshire	GP partner	30
Ajay	Male	2	Warwickshire	GP	5
Alina	Female	2	Warwickshire	GP registrar	1
Omar	Male	2	Warwickshire	GP ST3	1 week
Callum	Male	3	Shropshire	GP partner	29
Becky	Female	3	Shropshire	Specialist physiotherapist	12

6.3 Negotiation

6.3.1 Overview of the theme

The first theme presented in this chapter is that of the negotiation that takes place during the consultation. As the focus groups and interviews were conducted concurrently and aimed to address the same research questions, differences between the views of clinicians and older adults in relation to a number of topics were identified. These differences are conceptualised here as forms of dissonance observed across the two participant groups. There are two layers of dissonance explored in this chapter. Firstly, there is dissonance between the accounts of clinicians and older adults across data sets. Secondly, different viewpoints between older adults and clinicians were reported as creating dissonance during the consultation, meaning that good outcomes satisfying both parties can be difficult to achieve. This results in a negotiation occurring within the consultation in an attempt to reduce the dissonance. This negotiation was reported as occurring in relation to both the assessment and management discussions in the consultation. Three subthemes were identified within this theme: mental health labels, treatment options, and acceptance. Each of these subthemes will be discussed, in turn.

6.3.2 Mental health labels

Mental health labels, in particular 'depression', were one of the most significant areas of dissonance between clinicians and older adults in relation to the assessment of musculoskeletal pain in the consultation. Clinicians tended to express an expectation that older adults were likely to present with anxiety and depression in relation to their musculoskeletal pain:

I think you're more likely to get comorbid anxiety or depression in the older
[AJAY: Yes, yep], you know, it restricts what they can do, they become anxious
about going out, will they make it out and back again

(Edward, GP, focus group 2)

Edward highlights a direct association between mental health problems, especially anxiety, and the decline in physical function due to musculoskeletal pain for older adults. However, despite his clearly held opinion of mental health problems being more common in older people, the views of older adults regarding this were mixed. For the majority of older adults interviewed, although they acknowledged that pain negatively affected their mood, they strongly denied the label of being 'depressed' in relation to their pain:

I said it got me down and he (the GP) said well "how down is this getting you, are you depressed?" And I says "oh no really you know, if I was depressed I'd be miserable every day and I'm not". You know, I'm not, I'm not depressed.

(Hilda, 80, medium risk)

Despite feeling as though the pain did affect her mood and caused her to feel down, Hilda refutes the label of 'being depressed'. This is justified for her through the fact that she did not feel miserable every day, perceiving depression to be a constant mood state. Similar thoughts were expressed by other older adults:

Yes it's got me down a little bit but not to the point of getting depressed, it's got me down because it's been painful but not to the point of being down, too down

(Karen, 67, medium risk)

For Karen, there is a subjective boundary of being 'down' before equating to depression; which she judges herself not to have crossed yet. Echoing Hilda's points, there is a strong denial of being labelled as 'depressed'. However, older adults were aware that their pain does have an impact upon their mood:

Yeah he did ask me was I depressed, I said "no I don't think I'm depressed"; but as it's gone on and it's persisted, I'm not depressed but I get a bit irritable. Like irritated, there's not a lot, I'm not normally like that but yeah I'm beginning to get a bit irritated with silly small things

(Carol, 73, medium risk)

Whilst there is a denial of being depressed, Carol expresses feeling irritable, an emotion she is able to directly link to her pain as she does not normally react this way. This was a commonly expressed across participants:

Marie: I did then say to her [GP] 'I don't feel depressed you know' [...] but I felt at times I was getting sharp with John [husband], not meaning to.

R: Yeah. Some of my other participants who've said the same as you have said that they don't feel down or depressed, but they've felt irritable?

Marie: Irritable. That's a good one. I think irritable, I think that's more the word.

(Marie, 67, high risk)

This may demonstrate the different ways in which older adults express the impact that the pain has on their mental health; or that perhaps older adults do not link 'feeling irritable' to mental health at all. Both Marie and Carol preferred using 'irritable' as a euphemism when referring to mental health; potentially as this is a more everyday term with fewer connotations than depression. GPs recognised this in their consultations with older adults:

I think they can tell you that they're hacked off with not being able to do certain things, yeah, whether that's expressed as depression I'm not so sure, could be, but they do notice the functional degradation in what they can do

(Edward, GP, focus group 2)

Here, Edward acknowledges that older adults may not communicate their feelings through the term 'depression', instead expressing their mental health through frustrations in their physical ability limitations. Expressions of annoyance and frustration were often used by older adults when describing the impact of their pain:

Well it wasn't so much the pain although I mean, it got you down until things started to settle a bit, I don't think I can say that I was depressed, I wasn't depressed with it I was just angry, I suppose disappointed that, that the effect it was having you know, the discomfort and everything. You didn't want it.

(Hilda, 80, medium risk)

Hilda reflects on the anger she felt at the impact that the pain was having on her ability to live her life the way she wanted to, and the limitations she felt in her independence and the pain sensations she experiences, reinforcing Edward's point. It may also be that this is a 'safer' way for older adults to discuss their emotions, as feelings of anxiety and depression are potentially viewed as more open to judgement and therefore a vulnerable way of presenting to a GP.

Linked to this, the communication challenges that GPs face during musculoskeletal consultations with older people was also raised, for instance when they are trying to assess a patient's mental health status:

Going back to things like communication and that, that can be a massive challenge as well particularly with, kinda someone about mental health et cetera as well and they just don't know how to communicate that and how do you draw that out of them really and that can be quite a challenge really

(Priya, GP, focus group 1)

Indeed, some older adults minimised the experience of negative mental health in relation to their pain:

Harry: If I didn't know that [the pain could be put right], if I was in a state of flux about what on earth was going on, yes I might indeed think 'Oh my god. Oh this is it then. Oh now what hymns did I ask for, have I got that right, and who have I left the money to?'

R: A bit of worry?

Harry: A bit of silliness.

(Harry, 82, low risk)

Harry describes feelings of worry in relation to his shoulder, and the subsequent thoughts of death and funeral planning as 'silliness', before reporting that he had never felt too worried about his pain. The use of the word 'silliness' to describe his worries and concerns displays a dismissive approach to mental health in conjunction with musculoskeletal pain, which was a common framing amongst older adults:

R: Yeah. Does it- when the pain's quite bad does it affect your mood at all, do you sort of feel low or..?

Mark: Yeah a little bit but I'm not that way inclined. [R: No. Yeah]. I laugh it off. That's the way I am.

R: In what way does it, a little bit? Is it just...

Mark: I don't know how to describe that, I don't know. I'm not down with it. You know I sometimes go in a mood over it but that's about it really.

(Mark, 67, low risk)

Mark minimises his experience in a similar way to Harry, describing the way he feels when he is down as being 'in a mood', and referring to his way to cope as 'laughing it off'. Through this, he appears to normalise these worries, inferring that 'being in a mood' is a part of life, and not specific to experiencing musculoskeletal pain. This illustrates why GPs might find it difficult to engage in a discussion with some older people with musculoskeletal pain about their mental health, as the GPs discussed:

For someone else who it has a major impact on them emotionally, sort of psychological wellbeing as well...I think the younger population are more ready to come forward and actually question that really and accept that actually there's a solution or there needs to be some help given for that, and I don't think older adults necessarily see it in the same way

(Priya, GP, focus group 1)

Priya identifies that for older adults, especially compared to younger adults, there is more of a challenge in GP consultations to engage in a conversation about mental health. This also shows differences in help-seeking behaviour, which could reflect differences in the motivation to address these issues between younger and older adults. Indeed, older adults often did not perceive mental health to be a legitimate concern; rather they felt that talking about their mental health was simply 'moaning':

R: And when I've talked to other people, one of the things some people have mentioned is that the pain can get them down a little bit or affect their mood, has that been something that you've experienced?

Grace: No, no. I've got nobody to moan to anyway have I? [laughs]. No I can't see the point in moaning about it, if there's nothing that can be done about it there's not much point is there?

(Grace, 79, medium risk)

Grace describes an implicit association between her mental health being affected by her musculoskeletal pain and 'moaning'. This mirrors Priya's views in the quote above, older adults have tended to associate their low mood directly with the experience of pain; therefore, if there is no solution to the pain then there is little engagement with the concept that their mental health could be addressed separately. This manifests in an aversion to discussing mental health at all:

Perhaps I do try to put too much a brave face on it I don't know but it's no good moaning about it all day every day is it you've just gotta get on with it.

(Karen, 67, medium risk)

Similar to Grace, Karen dismisses discussing her mental health as 'moaning', and instead feeling that she has to 'get on with it', as she does not envision anything useful or helpful coming from talking about it.

However, it is important to recognise that whilst these experiences were discussed by the majority of participants, this is not the same across all older adults; some were accepting of their mental health needs, and recognised this in relation to their musculoskeletal pain:

Rose: If I'm in a bit of a low mood or state of mind, I just think 'oh, do I need this, you know come on, time for me to go'. But it doesn't last long. Yeah.

R: Do you mind me asking what you do when it is feeling low?

Rose: Nothing really. Because when you're like that, you don't think let's do something to help me, you know you just sit and be miserable and then it passes. I think that like, people with depression, they say you should snap out of it but how? If you're down there you can't just get out of it or you wouldn't have depression would you?

(Rose, 84, medium risk)

Rose identifies that she does feel low and is accepting of labelling this as depression. Importantly, this is a label given to her mood herself, rather than by her GP. Additionally, she recognises that this can be difficult to manage, especially alongside her pain, and might not be recognised by other people. However, despite this viewpoint Rose does not seek help; rather she lives with her depression until it eases naturally. Acknowledging mood is especially pertinent in relation to GP consultations for pain:

As long as they look at that whole picture of a person, and not just the bit that's broken, the ache or the pain or the illness, that they take into account that person's mental or emotional state which has a huge impact on recovery from whatever physically is wrong. You know, if that isn't treated, the depression, the anxiety, the worry, if that isn't taken into consideration and helped [...] And I know Malcolm's been through things that caused his depression that it just kind of springs you back into that dark hole, you know. You think 'oh god, and now I've got this pain to worry about, or this cancer or this whatever'

(Patricia; Malcolm's wife)

The importance of a clinician seeing the person as a 'whole', and not just attending to individual symptoms, is portrayed by Patricia, who describes the need for a clinician to take into account the mental health of a patient in addition to their physical needs.

Patricia associates a lack of recognition as having severe negative outcomes from a consultation, as the pain can have a negative impact upon already existing mental health conditions. Whilst Rose, Patricia and Malcolm were comfortable in discussing their mental health needs, they represented only a minority of the sample.

Despite the majority of older adults appearing to not wish to engage in conversations regarding mental health, all older adults were happy to be asked about the impact of pain on their mood as part of the STarT MSK tool in the consultation. All older adults reported that the questions were acceptable and relevant to musculoskeletal pain and GP treatment decision making:

R: I'm interested in what you think of being asked those [STarT MSK Tool] questions in a consultation.

Karen: Well I think they're quite valid to be asked to be honest. I think they're very good, if somebody is in pain these are very valid aren't they?

(Karen, 67, medium risk)

George: Yes, yes they all do seem like very sensible questions. Yes, certainly a GP will want to know how much pain you've got and how you're dealing with it.

R: Would you be happy to answer all of those in a consultation?

George: Absolutely, yeah, yes. Yep

(George, 81, low risk)

R: I'm just curious about your point of view of those questions and whether you think they're helpful to ask in a GP consultation?

Erin: I think those are really good questions, yeah, do you feel anxious about it... Because I think that can have a big effect on the pain, anxiety.

(Erin, 67, medium risk)

Despite being reluctant to have in-depth discussions about mental health, all reflections upon the use of the STarT MSK Tool, including the mood questions, were positive. Furthermore, use of the STarT MSK tool may help to facilitate discussion for older adults who feel unable to describe their concerns to a GP:

R: Is that because they're your first port of call aren't they [the GP] I suppose they have to be a little bit like a detective almost and they have to figure out-

Hilda: Yes! Oh yes. Cause sometimes a patient I think can't always describe the way that a GP will understand what the problem is [...] So I think it [the STarT MSK tool] would be useful.

(Hilda, 80, medium risk)

This is important to recognise, as it suggests that despite there being tension and dissonance regarding discussing mental health in a consultation with a clinician, when this is included as a routinely asked question as part of a standardised and formalised assessment, this appears to be more acceptable. There are multiple ways in which the STarT MSK Tool may be more acceptable to older adults in regard to mental health: firstly, it only requires a 'yes' or 'no' answer, rather than an in-depth discussion. Secondly, as discussed earlier in this subtheme, the term 'depression' may be associated with negative connotations for many older adults. Therefore, as the STarT MSK tool is phrased as 'feeling anxious or low in mood', this may be key in its acceptability for older adults.

6.3.3 Treatment options

A key part of both the consultation and use of stratified care is selecting recommended matched treatment options that are appropriate for that individual patient. The main treatment option discussed by both clinicians and older adults in interviews was the use of painkillers and analgesia, ranging from over the counter medicines such as paracetamol to prescribed medication such as opiates. GPs felt that these were what older adults expected from a consultation:

Andrew: I think older people are less accepting of this psychological approach, they want the more physical traditional, stick a needle in me and it gets better, you know that gets better-

Edward: Do something make me better. Tablets. Mmm

(Focus group 2)

Andrew and Edward describe their expectations of older adults consulting wanting to be given prescriptions, as a way to 'fix' the pain, and be made better, rather than try non-biomedical approaches such as psychological support. This reflects the previous subtheme of mental health, with the majority of older adults being reluctant to

acknowledge mental health and psychological factors in relation to their musculoskeletal pain; GPs feel that the psychological approach is not as acceptable as the medical route for older adults. However, prescribing painkillers to older people was reported to be a cause for concern for GPs in regard to the side-effects and management of the medication:

In an elderly person you may not want to give a high dose of opioids 'cause it's going to harm them in a different way, and actually which one's better, harm them in one way or actually manage their pain, which is not a good quality of life to have, but sometimes it's a juggling act.. and that can be quite a challenge

(Sunil, GP, focus group 1)

Sunil describes that older adults may be particularly vulnerable to significant side effects with strong painkillers, however the responsibility is perceived to lie with the GP to make the right decision as to the most effective way to manage the pain whilst trying to take into account the older adult's quality of life. Omar further highlights these challenges by discussing the difficulty of removing painkillers and analgesia from older adults once it has been prescribed:

I think the problem I have with it is that I'll find these elderly patients who've been on paracetamol and codeine regular for months and months if not years and I don't know what effect it's having for them, they're still complaining of pain and then juggling that with everything else that they want is the bigger problem that I find really, erm, cause one they're already on the analgesia, most of them can't take ibuprofen for one reason or another so I don't have anything else to try for them and they don't want to let go of what they've already got so I'm kind of stuck with doing nothing really

(Omar, ST3/GP, focus group 1)

In their experience, GPs expect that older adults with chronic pain who have been taking painkillers for a long period of time are fearful of the consequences of coming off the medication. Thus, GPs feel that if medication options are not available, then they are limited in what they can do for the patients.

However, when discussing painkiller use with older adults, perspectives varied. Some older adults describe wanting to receive painkillers after consulting the GP, and relying on them to manage the pain; reflecting the GPs' concerns above:

You ask on the forms how I manage my pain on my own, and I need relief like an injection or painkillers, I could never manage that intense pain totally on my own without some sort of drug or treatment.

(Karen, 67, medium risk)

Karen displays low self-efficacy in her ability to manage the pain herself, describing a reliance upon injections and medication, reflecting the GPs' concerns discussed above. The main factor that Karen explains influences her ability to cope with her pain is the intensity. However, some older adults reported using painkillers and experiencing a benefit, but also not relying on them:

If I can just keep it under control with the tablets, I know they'll have to get stronger, but as long as I can, 'cause I'm on co-codamol at the moment, 30mg codeine, yeah two tablets four times a day but sometimes I don't take them four times a day, if I'm here doing crochet or something and I'm not in pain, why take them? Although the doctor says if you take them four times a day it takes the pain away, but I don't.

(Rose, 84, medium risk)

Rose reports that whilst she does find the painkillers effective, she does not feel the need to have them continuously; rather she will use them strategically based upon what she is doing that day. Therefore, Rose and Karen present different views and

attitudes to the use of painkillers, which may be linked to pain intensity, self-efficacy and quality of life.

The majority of older adults however reported not wanting to take painkillers regularly for various reasons, and sharing similar views to those expressed by the GPs:

Elizabeth: 'If it's really bad, I'll just take paracetamol. [...] Not every night, well I don't like taking tablets you see, so.

R: Can I ask why?

Elizabeth: Just don't want to get to the age and the stage where you're pumping tablets in your body all the time

(Elizabeth, 75, medium risk)

Elizabeth associated her age with taking tablets and expressed a reluctance to engage in this expected behaviour, meaning that she would only take paracetamol if the pain was quite severe. This suggests that, in relation to some older adults, there is less dissonance between GPs' and older adults' views than the GPs perceived. Erin also discussed not particularly wanting to take painkillers:

Well, when I had a problem with my back a couple of years ago I was prescribed, I've still got them actually I think I took a couple of them one night to help me to sleep, it's the one that's got paracetamol and codeine at 15mg. I mean knowing what that's about and the effects that has I wasn't going to take a lot of them, now this was a couple of years ago and I've still got most of them

(Erin, 67, medium risk)

For Erin, the most important factor regarding the painkillers was the potential side effects, resulting in her making a conscious decision to only use a small amount of them in the management of her pain. Grace also reports only sparingly using paracetamol to manage her pain:

Grace: I take an aspirin occasionally, not aspirin what do you call it, paracetamol, but I don't take anything other than that

R: What is it that makes you not want to take tablets?

Grace: Well unless I really need it I can't see the point in them, you know all these antibiotics that they give and that, I'd rather not unless I've got something really awful and I haven't got anything really awful so there's not much point in taking anything

(Grace, 79, medium risk)

Grace does not perceive her pain to be serious enough to justify taking tablets to treat it, comparing their effectiveness with antibiotics. The decision to take tablets appears to rely on a subjective judgement of an illness being severe enough to warrant them.

Whilst GP expectations and concerns were of older adults wanting to take tablets and the challenges associated with managing this, for the majority of older adults, this was not the case. As the focus groups unfolded, this was recognised by some clinicians:

I think there's a generation there that actually, as we said about they're stoical aren't they and that they do self-care in probably in ways that they've, things been passed down through generations et cetera a lot of like home remedies that kind of thing, but they're very reluctant to come in really aren't they until they've tried x y and z and exhausted all possibilities really [...] you know not everybody wants painkillers as well you know particularly as people get older as well so there's an element of fear

(Priya, GP, focus group 1)

Priya recognises the points that older adults expressed regarding painkillers not being a preference, and the elements of worry and fear that come from them for older adults. Additionally, Priya identifies an extra factor relevant to the oldest generation, who may

wish to try and self-manage at home before consulting the GP for pharmacological treatments. Becky sums up the variation she observes in physiotherapy practice with regard to older adults' use of pain medication:

Cause I get some that just won't, even the older generation, they won't think about having a chat about analgesia to their GP and then you get the, yeah regardless of their age either or you get, I get older people who won't take them or I get older people who're on a whole cocktail of things

(Becky, physiotherapist, focus group 3)

Becky builds upon Priya's point that there may be barriers to older adults communicating with their GPs about use of painkillers, but identifies the spectrum of medication use with extremes at either end; taking none or taking multiple.

Despite recognising that not all older adults want to be taking painkillers, clinicians still report finding it difficult to communicate about alternative treatment strategies in the consultation:

The big message for a lot of people with arthritis is we need to change your lifestyle not we need to fix your joint and I'm afraid that falls on deaf ears so often

(Callum, GP, focus group 3)

Callum refers to recommending lifestyle changes as difficult for older adults with arthritis, suggesting that older adults are reluctant to self-manage the condition and would rather have a biomedical treatment (e.g. medication or an injection) to 'fix' the problem. This point of view was also discussed in the second focus group:

Ajay: I guess it's two different approaches as well. One's active, one's passive isn't it. We give them a medication or injection they just have to sit there and

take it, all the psychological stuff is a lot of hard work to rethink about your pain and how you manage it and you know, that takes a lot-

Edward: So's physio, that's an active process, you've gotta go and do it to get any benefit out of it and [Ajay: Yeah] and people want to think, a lot of people want physio to sort of [Ajay: Get moved around] do your thing to my knee-

Ajay: I think by that time they're [older adults] it's ingrained, they're programmed, you know [...] "the injection's going to make me feel better", I guess they could be injecting water but they might just feel better because they've had like an intervention

(Focus group 2)

Ajay builds upon Callum's point by explaining how they perceive older adults to prefer treatments that are more 'passive' in nature; that do not require a high level of patient effort and engagement. Despite the principles of physiotherapy actively involve the patient, Edward notes that older adults can also expect for this to be passive. This is attributed to older adults being less willing to change their views regarding treatment, with psychological management strategies being newer and therefore less acceptable and approachable.

6.3.4 Acceptance

Leading on from the treatment options available to older adults with musculoskeletal pain, acceptance of pain was discussed by both clinicians and older adults, with various points of view. For clinicians, there was some pressure identified from patients that their pain could be fixed:

There's almost a sense from some people that it's their human right not to have pain...people feel that it's their right to not be in pain and trying to explain you know, your back pain is a long-term condition like diabetes is or high blood

pressure is the way I try and explain it. But yeah it is that thought that I shouldn't be in pain, someone should be doing something for it.

(Callum, GP, focus group 3)

Callum describes the external attribution of responsibility that he perceives is given to him by patients who do not want to accept that their pain is a long-term condition, creating challenges in managing this in the consultation. Alison builds upon this by identifying that it is the psychological aspect of pain that older adult patients may find unacceptable:

People don't like to think there's a psychological element, 'cause I know, looking after the pain service, a huge part of that is acceptance, that there isn't a cure for everything, and it's a case of managing whatever your symptoms are to some degree

(Alison, Physiotherapist, focus group 1)

In contrast, some GPs had rather blunt views towards expecting older adults to accept musculoskeletal pain:

I mean I always said I would like to write a book that you can open up on your age group and on this side of the page [gestures to left] it says 'expect this, fuck off', this lot [gestures to right] might be important, you can talk to me about it. And I guess joint pain, as you get older is going to become a more prevalent thing on the left hand side of the book, it's gonna be there, you're gonna hurt, I know, live with it

(Edward, GP, focus group 2)

For Edward, as musculoskeletal pain is inherent to the ageing process, his view is that older adults should be ready to expect this and subsequently accept the pain when it happens, rather than consulting the GP for treatment; an example of how some GPs normalise pain in older adults and how their decision-making may be driven by age.

This shows dissonance with other GPs who participated in the focus groups; as Edward's view contrasts with Callum's above, that GPs should help and support older adults with long-term musculoskeletal pain to transition into acceptance.

On the whole, the majority of older adults had recognised that some form of acceptance was needed in relation to their pain, showing dissonance with Edward's view from a GP perspective above. However, acceptance was generally viewed with negativity:

She knows [i.e. the GP] she's limited to what she can do and I accept that you know. It's not like a sports injury or something where you can keep going to physio and the outcome is good you know that sort of thing, this is, I suppose you would say it's palliative really.

(Hilda, 80, medium risk)

Hilda describes acceptance as occurring when there are no more treatments that can be provided by the GP. Describing her pain management as 'palliative' displays her strong negative views of the situation, associating it with having to cope with the pain for the rest of her life. Malcolm and Patricia also describe acceptance as partly resignation:

Malcolm: I'm just getting you know [sighs] annoyed sometimes y'know, like, I'm struggling to do things now, I just can't you know, struggling to do things now

Patricia: It's having to accept your limitations like you'd never had to think about before

Malcolm described his frustrations with not being able to live as he wishes to due to his musculoskeletal pain, and as such acceptance is associated with limitations in his life. This is especially difficult when these limitations have not had to be addressed before. In contrast, for some older adults, acceptance of pain as permanent was not seen to

be an option at all:

R: And so, we were saying it sounds like when you decided to go to the GP you were expecting to get the same thing again? Were there any other expectations you had around it?

Elizabeth: I just wanted it cured

Elizabeth's only desire for the outcome of her consultation and management options was to have the pain cured, and that was the expectation that she went to the GP and physiotherapist with. Juxtaposing the views of other older adults, for Rose, the impact of her pain on her life was acceptable:

Rose: It does have an impact on my life but that's acceptable I find. And I look around me and I think there are far, far worse people within a few feet of me everywhere I go you know. So, with the help I get I just think I'm very lucky.

R: Can I ask, with you saying it's acceptable, what makes it acceptable?

Rose: Because I think my age, I mean yeah there are people my age that haven't got any problems but not many. And other people of my age are in nursing homes or wheelchair dependent and I'm not and as long as I can keep mobile independently I think that's acceptable. Why should I say "why me?" You know, why not me? It's just, just my way of looking at things.

(Rose, 84, medium risk)

Contrary to other participants, age was the driving factor in Rose's acceptance of her pain, specifically comparing herself to the health states of other people her age; reflecting that whilst she has musculoskeletal pain, the fact that she is able to keep her independence mitigates the impact that pain has on her everyday life.

6.4 Reassurance

6.4.1. Overview of the theme

The second theme presented in this chapter is reassurance. The main focus of this theme is the reassurance that clinicians can provide for older adults consulting with musculoskeletal pain. Two subthemes were identified within this main theme: affective reassurance and clinical reassurance. Affective reassurance is conceptualised by the relationship between the clinician and older adult. There were numerous factors that were identified as integral to affective reassurance, including: communication (both verbal and non-verbal), listening, empathy, and kindness. Clinical reassurance is reassurance specifically relating to the musculoskeletal condition. This is split further into two areas: diagnostic reassurance (the reassurance gained from identifying and diagnosing a cause for the musculoskeletal pain); and cognitive reassurance (how the clinician explains the assessment and management of pain to the older adult; including the older adult in shared decision making and the attitude of the clinician towards musculoskeletal pain).

6.4.2 Affective reassurance

Communication in the consultation formed a large part of affective reassurance, directed from the clinician towards the older adult. Across all interviews, older adults highlighted that one of most important factors in communication was the feeling of being listened to by the clinician:

R: What makes a good doctor for you?

Carol: One that listens to you that sort of hasn't filled in a prescription before you've even sat your bum on the seat! [chuckles]

(Carol, 73, medium risk)

In consultations for musculoskeletal pain, listening is an integral factor. Carol highlights that for her, GPs' listening behaviour is integral to a good consultation; especially by

the GP listening to her before suggesting any treatment decisions. Carol goes on to further discuss the impact that this can have on the consultation:

R: You mentioned one of the things people go to the GP for, the first thing you want is reassurance. Do you think, did you feel reassured after yours or...?

Carol: Most of the time. Most of the time you feel you know, you've been listened to and yeah, so you do feel... yeah you do get the reassurance most of the time, I've never been treated badly and [they've] never been rude, you know

Carol explicitly links clinician listening to having a positive experience with the GP in relation to musculoskeletal pain, and being treated well. These experiences were strong contributors to affective reassurance, with Carol reporting feeling reassured after her GP consultations. Additionally, the shared communication that occurs in a consultation is acknowledged, with Carol reporting that both her and the GPs treat each other well, highlighting that the dynamics of a good consultation also rely on the communication from the patient.

However, it is important to note that it is not simply the clinician listening that provides reassurance, but how patient concerns are presented and subsequently how the clinician acts in response. This is evidenced through Susan's discussion of the communication with her GP in relation to the diagnosis and prognosis of the pain in her shoulder:

Susan: I think he listened, I do and I think, but he probably isn't aware that's what my concerns are. Perhaps I didn't make that clear that I was concerned about the future or whatever.

R: So sort of concerned about the longer term, what specifically in relation to your shoulder?

Susan: And I suppose, oh could the other one go and I reckon I'll have to get on google won't I? The trouble is you go on Google and you can read all sorts of things can't you?

(Susan, 67, high risk)

Susan describes a nuanced difference between her GP listening, and asking the right questions to identify her concerns. Specifically, despite feeling as though the GP listened, Susan felt that it was her responsibility to introduce any concerns that she had regarding her shoulder pain. As she did not do this, and the GP did not ask, her concerns about her shoulder were not acknowledged, addressed or explored in the consultation and little clinical information or prognosis was offered, meaning that Susan did not feel reassured and actively worried about the prognosis of her shoulder condition. Subsequently, this resulted in Susan considering researching the condition herself outside of the consultation, reflecting the uncertainty that older adults can be left with if affective reassurance in addition to clinical information are lacking in the consultation.

A further factor relating to having a good consultation experience is the clinician balancing both listening and their use of a computer:

Well I think it's, if they listen, if they're not watching the screen all the time and they listen to you, you know.

(Grace, 79, medium risk)

Use of the computer in the consultation meant that older adults perceived that the clinician was not listening and engaging, creating a barrier to effective reassurance. This is also recognised by clinicians:

So from my point of view the less I have to look at that [points at computer] and the more time I've got to talk the better. [...] As long as you know, they [patients] understand where you're coming from, I think some of the oldies might not. Oldies? [laughs]. You know, what's going on here, why are you doing that...

(Callum, GP, focus group 3)

Callum identifies use of the computer as a barrier, reflecting that communicating with older adults through talking is most effective, and that older adults may not fully understand the use of the computer, escalating the barrier between the clinician and older adult in the consultation. This was a common point across focus groups:

[in relation to using the electronic STarT MSK template in a consultation] I'm just very mindful of the fact that I just spend my time, make sure that they feel that they're getting the same care and level of attention really.

(Priya, GP, focus group 1)

Priya identified that using the stratified care electronic template in a consultation could distract from the affective reassurance factors that are important to older adults, and therefore she makes a conscious effort to show older adults that she is still listening to them.

The importance of listening and communication as a part of effective affective reassurance is further highlighted by older adults' discussion of consultations in which they did not feel listened to:

'I says 'it hurts, it bloody well hurts. I'm in agony with it'. The words he [the GP] said 'oh you're only doing it to sign on'. Well, I know I did, I lost it [his temper].

(Mark, 67, low risk)

I think that plays a big part because that physiotherapist wasn't listening to me and that's the part I remember most, when I told her heat aggravates this, cold packs help it, heat aggravates it but she insisted that it [heat] needed to be done. [...] So that's why I decided to accept my friend's offer [of Shiatsu treatment] because I wasn't having very good results from that physiotherapy. Basically, I believe because she wasn't listening, I know what's actually happening in my body but she didn't treat me as if I did know that. It wasn't good.

(Erin, 70, medium risk)

Mark and Erin explain the impact clinicians not listening to them had. For Mark, this had a very negative impact on the consultation, resulting in Mark losing his temper with the GP. Erin details the role that listening has on trust and engagement with the matched management options. Specifically, she reported feeling that the physiotherapist was prioritising her own clinical knowledge rather Erin's experiential knowledge and preferences in the treatment decision making. Therefore, as Erin did not feel that the clinician listened to her, this had a significant impact upon the pathway she took to manage her pain – deciding to seek treatment elsewhere.

Alongside verbal communication, older adults and clinicians also emphasized the importance of the clinician's non-verbal communication in a consultation:

I think if you can see by a person's body language that they're disinterested or bored or want to get rid of you fairly quickly that's not terribly helpful or positive.

(George, 81, low risk)

The body language displayed by a clinician in a consultation was seen as being equally important as listening, representing their interest and engagement in the consultation. As George states, if a clinician's body language is perceived as negative

then this can have repercussions on the rest of the consultation. Callum and Becky also discuss this:

Callum: I'm not sure I have it but you know there's, some doctors have that magic don't they. I'm sure you guys are the same [gestures to Becky].

Becky: no definitely, I think like you say it's not all to do with what you've said it's how you are. I was saying about the body language, It's their body language, your body language, yeah.

(Becky, physiotherapist, focus group 3)

Both Callum and Becky emphasize the integration of body language in addition to listening and verbal communication, describing a more holistic presentation of communication from the clinician. It was highlighted that it is not only the clinician's body language that is important, but also the patient's body language, representing the shared space of the consultation. Clinicians detailed the important body language factors for older adults:

What it is that determines the good outcome from the bad you know, handshaking, eye contact, listening you know, you can say nothing and they go out happy. You can hardly say a word and they go out happy it's just that they've had the right experience and there's some magic involved in that

(Callum, GP, focus group 3)

The significance of body language and listening are emphasized by Callum, to the extent that he suggests that these are the key factors in determining a good outcome for older adults, rather than clinical treatments. This reflects the importance of affective reassurance, and the positive impact that it can have upon a patient. Indeed, the reassurance gained from a good consultation that contains these factors means that the consultation can have positive outcomes even if no treatment recommendations

are made. The combination of verbal communication, listening and body language is essential to older adults feeling reassured:

Yes it is nice to have some reassurance 'cause that almost make you feel better psychologically as well as taking pain relief, yes. Yeah. I think verbal reassurance and a pat, or a, just a smile

(Karen, 67, medium risk)

For older adults with musculoskeletal pain, the psychological benefits gained from having a consultation with a clinician who not only listens, but also shows respectful and engaging body language are as important as receiving pain relief through medications.

Empathy, kindness and care from the clinician were often discussed by older adults. Whilst this was mostly framed by highlighting benefits, this was also discussed through explanation of the negative impacts that can result when clinicians are not perceived as displaying a caring attitude:

A bit of kindness rather than her being so poe-faced. That's the one, that's the most important thing that comes to mind, she was professional but she didn't seem very kind. And I know that's an awful thing to say cause maybe it was just her way, but a little bit of kindness might've just made me feel better when I was crying. [...] I came out feeling embarrassed rather than reassured because I'd got upset.

(Karen, 67, medium risk)

The feelings of sympathy and kindness that Karen desired in the consultation were not given by the GP. Specifically, Karen links the GPs' body language to kindness; particularly her facial expression, whilst also explaining the impact that the lack of kindness had on her.

Despite the GP treating her clinically, Karen did not leave feeling reassured; rather she felt embarrassed. Karen later states that she would not want to see that GP again, reflecting how kindness is an essential part of affective reassurance and a good consultation for older adults. Older adults emphasized the importance of empathy and kindness for older adults consulting with chronic conditions:

Malcolm: I could talk to me GP

R: So do you feel that particular doctor kind of understands, do they understand that pain you feel and sort of how it's affecting you?

Patricia: It's a bit of empathy there

Malcolm: Yeah, yeah. Yeah. I know she can't wave a magic wand, I know that you know, she can't wave a magic wand 'oh you're better now' so yeah

(Malcolm, 71, high risk)

For Patricia and Malcolm, empathy from the clinician (in this case the GP) is essential when older adults are consulting with chronic musculoskeletal pain; helping Malcolm to accept that whilst there is no immediate 'fix' for his pain, he still feels that he can talk to his GP. This is a very salient point for older adults:

I suppose putting it in a silly way really, but knowing that somebody cares, you're not just given tablets and get on with it, so obviously the doctor cares because she put me on to this scheme [i.e. used the stratified care approach] and the physio cares. I think when you live on your own that is a bonus.

(Rose, 84, medium risk)

Rose summarises Karen, Patricia and Malcolm's comments by referencing the psychological benefits of the kindness and care she received from her GP, not simply only being given medication for her pain. Rose associated being referred onto the

STarT MSK trial as the GP caring about her, and wanting her to improve; and Rose especially reflects upon how important this can be to older adults who live alone. However, from a GP perspective, it can be difficult to find the right balance between being 'kind' and following their clinical judgement, particularly when management involves reducing treatment rather than suggesting additional management options:

I think it's a difficult process because what you're trying to get across is that we're being kind and considerate and this [reducing opioid medication] isn't cutting them short

(Callum, GP, focus group 3)

Whilst referencing the decision to reduce prescriptions of pain relief medication, Callum refers to the nuance needed in a consultation to portray kindness to the patient whilst acting on their clinical expertise. This decision making is complicated by GPs not wishing to portray the perception that they do not care or want what is best for the patient, or that they are doing something that conflicts with the patients' desires and expectations.

Whilst it was important for older adults to feel that the GP cared about them as a patient, it was also considered important by a few participants for them to be able to see the GP as a person too:

He's a really nice guy and it's, I mean, the first time I saw him I'd walked into his room and he was looking at something on his monitor and amazingly he said 'come and have a look at this' right? And what he was looking at on his screen, he said 'look I've just bought this' and it was this super-duper skateboard [...] Because he was looking at something as I walked in he showed me what he'd been looking at. It wasn't just oh well you know pretend it was something medical. He showed me what he'd been looking at. And that really endeared

me to him that he did that and told me what he was doing, you know. I thought I like this guy.

(Erin, 67, medium risk)

By being willing to engage in non-clinical conversations in a relational manner, the GP created a more informal and friendly environment in the consultation. Including Erin in this had a substantial positive effect on the relationship that developed between them in the consultation. The positive impact of knowing that the GP was a person too and not simply just there to see her as a patient led Erin to feel comfortable with him and develop trust in him as a GP. Having a long-standing relationship with the GP was key to this:

Well, I was quite happy with it [having this GP] because again I knew him I knew what he was like, again he's not a perfect person, he's had his faults but then I think we all have and we see him whenever we can

(Hilda, 80, medium risk)

Hilda had seen the same GP for many years, and highlights that seeing the GP as a person is not only knowing the positive aspects of them, but also recognising that they are human and not perfect. For her, this strengthened the relationship between them, and did not diminish the trust she had in him as a clinician.

Altogether, many aspects of affective reassurance have been discussed, and the importance of these highlighted. Below, Erin sums up the impact that a consultation with affective reassurance can have on an older adult with musculoskeletal pain:

When I went to the GP, and the car park isn't that far from the surgery, but it was a strain walking that short distance. Now when I walked out of that GP's room my back felt better because he was so positive, yeah? He's such a lovely

person I walked out of there with what I was telling myself something is going to be done. There's hope! I walked out of there feeling better, I did. My back felt better walking out of there than it had walking in there because of his positive attitude that this was going to happen, yeah, I walked out of there with something's gonna be done. Yeah.

(Erin, 67, medium risk)

This shows the impact and power that affective reassurance can have upon the psychological aspects of coping with musculoskeletal pain for older adults, and subsequently having an impact upon the physical experience of the pain itself.

6.4.3 Clinical reassurance

This subtheme explores reassurance in the consultation that focuses on the musculoskeletal pain itself. It is split into two topics: diagnostic reassurance and cognitive reassurance.

6.4.3.1 Diagnostic reassurance

Diagnostic reassurance refers to the reassurance gained for both clinicians and older adults from having a diagnosis for the cause of the musculoskeletal pain. Scans were the main management option described as being reassuring for older adults:

Having an X-ray is like having a photograph of proof and say look, this is an X-ray which is a photograph of your insides and this is the position of the bones and you can see that they're not where they should be

(Patricia, Malcolm's wife)

As assessment of musculoskeletal pain often relies on self-report, this can cause doubt in the legitimacy of the condition. Patricia explains how having a scan that showed the underlying physical cause of Malcolm's musculoskeletal pain provided external

validation for both of them, and the clinician. Steven expands on the use of scans in diagnosing a cause:

I wish someone had just said go and have a scan, get the scan because I don't know [...] if someone says take a painkiller I'll say well all that's doing is just suppressing the problem, it's not solving it

(Steven, 67, medium risk)

Steven explains how the most beneficial management option for him was going for the scan, as simply taking painkillers is only managing the symptoms of the condition, rather than the cause. However, it is important to note that Steven's scan showed his pain was being caused by sciatica, and thus he received appropriate treatment options for this condition. Therefore, whilst scans were desired and reported to be reassuring, this may only be in the case where an underlying cause is identified through the scan; clinical reassurance may be most effective when a diagnosis can be given.

Clinicians also identified getting reassurance for themselves from diagnosing a condition causing the musculoskeletal pain. This was often due to the potential of severe underlying causes of musculoskeletal pain in older adults, that need to be identified:

Your problem is occasionally you're going to get some nasty disease lurking myeloma, you know, underlying malignancies

(Andrew, GP, focus group 2)

Andrew expresses the caution and vigilance needed by GPs in the assessment of musculoskeletal pain, as underlying malignancies may have a severe impact on this population, who already have added complexity. This is essential to consider in relation to the use of stratified care:

I think it's just being mindful isn't it, stratifying management of musculoskeletal disorders in the elderly [...] it's the other pathologies and being careful that

actually you don't get taken down some abnormal path, and being drawn into it from that perspective and assume it's just a musculoskeletal disorder. It's almost the opposite, we should be not thinking it is musculoskeletal disorder unless proven otherwise

(Sunil, GP, focus group 1)

Sunil concludes with the wary suggestion of investigating every case of musculoskeletal pain in older adults to rule out other pathologies before giving a diagnosis of a musculoskeletal disorder. Therefore, GPs feel that they have to be cautious in their use of stratified care for older adults to ensure that they are not missing any important and serious underlying diagnoses, reflecting the responsibility GPs feel in ensuring a correct diagnosis is made for this population. Further discussion supports this cautious approach to treatment, but suggests that it is not currently implemented in consultations:

I think there's a danger that we might miss out that if someone comes with knee pain, if they're over 50 "they've got arthritis, no question", we don't consider other diagnoses, "they've got arthritis". If they're below 50 we might consider they've got a ligament injury or a cartilage injury or something like that

(James, GP, focus group 1)

James explains that typically older adults' MSK pain is attributed only to arthritis, contrasting with the preceding discussions regarding the importance of thorough investigations. However, he cautions that there is a danger for GPs doing this, and does not advocate this approach. This contrasts the discussions presented in the 'negotiation' subtheme around some GPs suggesting that older adults should accept that their pain is simply musculoskeletal in nature and will not be cured.

Having a scan and subsequently receiving a diagnosis was equally reassuring for older adults. Despite musculoskeletal pain being common, particularly in this age category, older adults also reported worrying that the cause may be something serious:

I think it probably did [impact upon mental health] to some extent, particularly because when you get something like that, you always think 'god is it cancer or whatever' so I think that has an impact on you till you know what the problem is
(Steven, 67, medium risk)

Reassurance. Reassurance that's it because it's not me bones. See my sister has to take tablets for osteoporosis to prevent it I mean, I don't mean she's got it and I started to think is something happening underlying that I'm not getting to the bottom of, I think I'd better go and see the doctor and yeah my GP's been smashing.

(Marie, 67, high risk)

Both Steven and Marie explain that they worried about their pain being a sign of underlying health conditions. For Steven, this concern was around cancer, and he described how worry can impact upon a patient's mental health until a diagnosis is given. Marie was concerned as she was aware that her sister has to take tablets to prevent osteoporosis. As Marie was worried that there was a potentially severe health condition underlying her pain, a diagnosis of fibromyalgia was reassuring in comparison. Similarly, a number of participants reported that their diagnosis of arthritis, despite it being a progressive condition, was reassuring:

R: Okay, and just going back a little bit, you mentioned there was almost some comfort in him saying that it was arthritis, can I ask you to just expand on that a bit?

Harry: Well first of all, it wasn't anything worse. There was no question of the, of my doctor looking at the problem and then saying 'well sorry about your arm but

it'll have to come off you know'. If [in that consultation] he had gone through various things that it might have been, arthritis would be I suggest one of the most containable.

(Harry, 82, low risk)

No I just think it is osteoarthritis. It's in my family, my mother had it so, yeah.

(Carol, 73, medium risk)

For both Harry and Carol, arthritis is not a threatening diagnosis to have. For Carol, this may be explained due to her knowing that this has been experienced previously in the family, and therefore expected. Clinicians also reported their experiences of patients being reassured by a diagnosis of arthritis:

Ajay: But I guess they are, I guess also they want that confirmation don't they, they've had a test done and then the test says they've got arthritis, y'know, it's like a-

Edward: You do get a proportion of people who go off, have their X-rays and go, I can show them the X-rays and there you go, you've got a really rubbish joint space in your right hip and they go 'ooh, so it's osteoarthritis then is it?'

'Yeah' 'Rightio, thanks for that!' exit stage right. It's a confirmation.

(Focus group 2)

Ajay and Edward report that for some older adults, having the confirmation through a scan of the cause of pain being arthritis is enough, and they do not request further treatment, showing the power of reassurance in the management of pain. However, both Harry and George reported that the diagnosis of arthritis and subsequent improvement in their condition resulted in them feeling like a 'fraud':

So from the point of view of this shoulder problem, maybe from a silly point of view, not on the day I went to the doctor but two, three weeks later I thought 'what have you been bothering him about?' [...] yes I did feel a fraud.

(Harry, 82, low risk)

The X-ray shows, there is arthritis there but it's not bad enough yet to need a knee replacement and she gave me very few simple exercises, I almost feel like a fraud now because my knee is so much better.

(George, 83, low risk)

For both, the fact that arthritis was not deemed to be a serious condition, and that the matched treatments had had positive effects in reducing pain and increasing function, resulted in them doubting the legitimacy of going to the GP for the initial consultation. Despite the clinical result being reassuring, low risk patients may be left with other, less positive feelings such as guilt.

6.4.3.2 Cognitive reassurance

Cognitive reassurance is the reassurance that older adults received from the clinician's explanation of the musculoskeletal pain, and their subsequent understanding of the condition. Older adults described consultations in which they were happy with the cognitive reassurance received:

He's one of the doctors who's always there and I've only ever seen him once before and that was years ago and he was very thorough, he takes it all very seriously and he's very thorough. And gave me loads of information and spent more than the allotted 10 minutes explaining it all 'cause Eric had come in with me as well, 'cause he wanted to know what he was gonna say and what they were going to do so he's in the loop rather than just me remembering. And he was very, very thorough.

(Karen, 67, medium risk)

I think healthcare professionals on the whole are very poor at explaining to people what's what, which is why both my wife and I were very impressed with the GP when he got out his model and said 'this is this and this is how it works and this is what's happening and this is what we're gonna try to achieve'.

(Steven, 67, medium risk)

Karen describes key aspects of cognitive reassurance; a thorough explanation of the cause of the musculoskeletal pain in addition to giving lots of information. This communication regarding explaining the condition is key in musculoskeletal pain, as often the causes are not obvious. Adding to this, building upon his experience as a retired healthcare professional, Steven reflects upon the typical communication skills clinicians have, with his GP's explanation of the condition exceeding his expectations. Particularly useful was the GP using a model to aid Steven's understanding of his back pain. Clinicians explaining the condition clearly helped older adults to understand their own pain:

The GP yeah. He told me, that, you've got this bit that pops up here which is all part of the mechanism of your shoulder the different bones. It's amazing, we're amazingly put together we really are but yeah I hadn't got that kind of movement, I know there's a bit of a way to go yet, but it's doing the exercises.

(Carol, 73, medium risk)

Through receiving effective cognitive reassurance, Carol understood the benefit that doing the recommended exercises was having on the muscles, and subsequently how this would help to reduce her pain and increase movement. Furthermore, the treatments being demonstrated can be especially useful in older adults' understanding and self-management of their pain:

Showing me how to do them, taking me through them and asking me to do them and just see if they help, yeah 'just do these, see if they help, let me know next time' but with quiet confidence and I'm sure that has a big effect, I'm convinced of it

(Erin, 67, medium risk)

It is not only the verbal communication that helps to aid understanding of musculoskeletal pain for older adults, but physical demonstrations as well. Erin describes how helpful the physiotherapist demonstrating the exercises was in increasing Erin's confidence in performing the exercises at home, and of the efficacy of the treatment. Explanation is therefore not the only important part of cognitive reassurance for older adults:

Rose: Oh yeah, she always discusses it and 'shall we do that, is that okay' yes.

Yes, she's not, she wouldn't just say like 'I'm doing this' she says 'let me think about this, what do you think about so-and-so' yes she does involve me [...]

R: Yeah, and you trust your GP so-

Rose: Yeah, oh yeah definitely. And the physiotherapist because a lot of them know more about the muscular and the skeleton don't they than some doctors do, GPs do. So I thought yeah well we're in good hands whoever it is.

(Rose, 84, medium risk)

Rose describes how trust is gained through shared decision making with her GP, and being involved and included in any management decisions. Additionally, clinical reassurance is gained from trust in the clinician's expertise and knowledge; as Rose describes through her perception of the physiotherapist as a specialist in musculoskeletal conditions. The importance of cognitive reassurance is emphasized through Susan's experience of a consultation lacking in explanation:

R: And in terms of the injection, it sounds like the doctor didn't really give you a very thorough explanation of-

Susan: No. Other than 'it will get worse before it gets better'. I don't think I've had an explanation of what the injection is, what it actually was and what it was to do. But, they're busy.

R: And would you have preferred to have a more thorough explanation?

Susan: Possibly, yes. Yes I think so. They seem to have leaflets for everything else. I mean, he did, when he first diagnosed he handed me one of these Arthritis UK exercise things

R: Oh yeah, the leaflets, yeah

Susan: But he didn't, it's about 15 or 20 exercises, and you know, well which ones? And he just handed- so, I don't know. I'm not saying it's not good it's just I don't feel, I don't know what the aim of the injection is in the long-term. What is my shoulder supposed to...?

(Susan, 67, high risk)

Susan details how the GP did not explain the reasons for having a steroid injection as treatment for her frozen shoulder; leaving Susan with unknown expectations regarding prognosis or improvement. This lack of explanation has also left Susan with low self-efficacy regarding the exercises she has been recommended, as she feels unsure in following the leaflet herself without guidance.

In addition to gaining cognitive reassurance from the clinician, some older adults were also able to cognitively reassure themselves regarding their pain due to their previous experiences with similar conditions:

But I'm hoping it will like, loosen up. He says it's so tight, the joint, the shoulder joint is so tight and the pain goes right down my arm to my wrist so it's not just

pain in the shoulder it goes right down my arm so I don't know, I'm not too bothered about it. It's a nuisance and I am hoping like it did before, after I had my knee done you know because you can't sort of it's surprising the muscles you use to get out of a chair and when you sort of, I used to push my arms down and heave myself up and I had a touch of it then and it got better as I got sort of more mobile.

(Carol, 73, medium risk)

Carol compares her current pain to a previous experience of musculoskeletal pain. As her previous experience was positive, resulting in a reduction of the pain, this gives inherent clinical reassurance that the same trajectory and result will be achieved again.

Elizabeth also comments on her previous experiences:

It was more the exercises and knowing that they would help because that's what exercises are for aren't they having had the one knee done, then I knew that you know, you've got to build up it's the muscle, forget what's going on in the knee it's all the surrounding area

(Elizabeth, 75, medium risk)

For Elizabeth, her previous knowledge of experiencing musculoskeletal pain resulted in a recognition of the importance of engaging with the exercises from the physiotherapist, and an understanding of the effect that the exercises were having on her knee.

6.5 The interplay between negotiation and reassurance

The themes presented in this chapter provide insights into the dynamics of a consultation for older adults with musculoskeletal pain. The negotiation theme presented suggests that there are aspects of the consultation in which there is a dissonance between clinicians and older adults, whilst the reassurance theme

discussed the importance of the relationship between the older adult and the clinician, in addition to the salience to older adults of understanding the cause of their musculoskeletal pain.

Subsequently, there are ways in which these themes interlink and inform each other. In particular, reassurance can help to mitigate and resolve the dissonance that is found in the consultation. There are two ways in which this process occurs; through continuity of care, and trust. In this case, continuity of care refers to seeing the same clinician for most or all of the appointments relating to the musculoskeletal pain, and over time this results in trust between the older adult and the clinician.

All older adults emphasized the importance of continuity of care in the treatment of musculoskeletal pain, for various reasons. Practically, it is useful for both the older adult and the clinician to have continuity:

Yes, there is a question of trust isn't there. There's also the cutting out of the dead wood, you don't have to go in and bring them up to date on what's been happening the last few years or waste time while they put up your details on the screen and go through it. My doctor will obviously have the details on the screen to remind him who, 'oh god it's him coming in', you know, but basically he will know 'oh yeah, we know about him, you know you've got this that and the other'

(Harry, 82, low risk)

Harry discusses the time that it saves in the consultation having a GP who knows his details, meaning that Harry does not have to relay everything that has happened every time he goes to the GP. There is an inherent reassurance in this, feeling more comfortable in going to the consultation.

For older adults, the GP knowing their history is reassuring and important; as there is a feeling of familiarity, both in terms of the older adult knowing the GP, but also the GP knowing the older adult. This is also useful for clinicians:

Sometimes you're going with what the patient has previously had, so you may, you know, if a patient's got to 80 years of age they probably haven't got throughout their life without having taken some form of pain relief, and, they, you know, you learn from your patients so they will be able to tell you whether they've had a bad experience on, on, a certain opioid, if that's what you're looking at

(Sunil, GP, focus group 1)

Continuity of care gives clinicians a knowledge of the older adult's medical history and experiences, meaning that they can make treatment decisions on an individual basis for that patient. This is especially important with painkillers, as discussed in the negotiation section; continuity of care can help to resolve the dissonance that requires negotiation because the clinician has learned what the patient's experiences have been. This helps to build trust in the relationship, which in turn impacts upon the older adult's decisions to consult in the future:

I managed to see the same person, and for me that's really important when I'm offered a choice of which doctor to see and I get to see the one that I trust

(Erin, 67, medium risk)

Erin highlights that when given a choice, she will see choose to see the GP that she has had built a relationship and trust with, demonstrating the importance of continuity of care.

Continuity of care is also essential in the discussion of mental health in consultations for musculoskeletal pain. As explored previously in this chapter, older adults are

reluctant to discuss their mental health with clinicians, but continuity of care and trust can help to lower these barriers:

Yes, she was the one, when I had the heart attack she was the one that came out to me here, and I've stayed with her ever since because she knows me personality wise, she knows me when I get low and she's very, very good.

(Rose, 84, medium risk)

R: Yeah. So it's sort of, and do you tend to be able to see the same doctor each time?

Malcolm: I did most of the time yeah

R: And does that make a difference?

Patricia: Oh yeah

Malcolm: Well, my GP, she knows me, she knows me depression you know, what caused it and what- yeah I feel I can talk to her

(Malcolm, 71, high risk)

Having a GP who knows the older adult, especially in terms of mental health, for both Rose and Malcolm means that the initial disclosures and explorations of low mood do not need to be reiterated in every consultation. This is especially reassuring regarding the stigma presented by older adults in the negotiation subtheme. Rose sums up the importance of this:

Yes, you see, the thing is now nowadays there isn't a lone doctor is there, there certainly isn't in towns I don't know about the countryside but there's always a group of six or so and the chances are you see a different one every time you go. [R: Yeah] And the problem with that I think is as much psychology in being treated by a doctor as there is in the medical field and you know they've got to

know if you're the sort who will get stressed or so on whereas she does know me.

(Rose, 84, medium risk)

Rose emphasizes the psychology present in a consultation, and how important this is to address in addition to the physical problems. Therefore, reflecting the extracts above, it is particularly important that the clinician knows and is able to recognise the psychological needs of older adults.

Trust and continuity of care not only help to mitigate the negotiating factors in a consultation, but also help beyond the consultation:

As long as you look like you're listening and addressing that, that's where the trust and rapport comes in 'cause then they realise that actually, you are listening to me, you do kind of understand what I'm going through and they're more happy to try and probably take on the advice

(Becky, physiotherapist, focus group 3)

Becky discusses how displaying good affective reassurance helps to build trust and rapport with an older adult patient, and therefore this means that they are more likely to act on the advice and treatments she gives outside of the consultation. This is essential for musculoskeletal pain management options such as physiotherapy, which are most effective when the patient acts on the advice in between consultations. This was also discussed from a patient perspective:

If you can get a rapport with your medic or whoever, physio or whoever, if you can relate to them and they to you and you feel like they're listening, that they're taking you seriously, that they're willing to help you, it automatically makes you feel more confident that what they've advised or whatever they recommend, you're more willing to try.

(Patricia, Malcolm's wife)

This expands upon Becky's point, by emphasizing the confidence that Patricia feels by having a consultation with affective reassurance, and means that she is more likely to trust the clinician and follow their recommendations. Furthermore, Erin links the power of affective reassurance to her acting on the physiotherapist's advice, and continuity of care:

She tends to speak to people as though they're intelligent and I got confidence from her with the exercises she showed me, and it was her manner of, it wasn't over the top it wasn't 'you do this and this is going to have a wonderful effect', it wasn't that. It's quiet confidence. Showing me how to do them, taking me through them and asking me to do them and just see if they help, yeah 'just do these, see if they help, let me know next time' but with quiet confidence and I'm sure that has a big effect, I'm convinced of it. And there's also this, she's such a lovely person I want to do these exercises so I can go back and tell her that what's she done, what she's advised me to do has worked.

(Erin, 67, medium risk)

Erin describes how the physiotherapist's manner, explanation of the exercises and confidence led her to feel motivated to engage in the treatment. Essentially, this treatment option had continuity of care, which created a feeling of 'partnership', providing her with further motivation to act on the recommendations.

Callum sums up the interplay between negotiation and reassurance, relating it to the unique setting of primary care:

I think the hug, I mean we're not hugging doctors but what the hug is saying is that you've left friends and that implies trust and that there's a relationship there and that, I think that's a lot of what general practice is about, you know where general practice is different from other medicine maybe is that a lot of these patients are your buddies and there's trust and there's an ongoing relationship

and if you say something it's not to get them out of your room and you're never gonna see them again, it's this is what I believe is best for you.

(Callum, GP, focus group 3)

Callum explains that affective reassurance and continuity of care and resolving negotiations are the nature of primary care, especially for older adults, meaning that there may potentially be a long-term relationship between clinicians and older adults, which requires trust. Additionally, he discusses how physical touch can be reassuring and relationship affirming, and may be a way in which older adults communicate.

6.6 Chapter conclusion

This chapter has presented the two qualitative themes that were identified in both clinician and older adult data: negotiation and reassurance. The data demonstrated that there are multiple factors which need to be negotiated within a consultation for musculoskeletal pain with older adults. Dissonance between clinicians' and older adults' views was identified in relation to multiple topics, especially communication of mental health, use of painkillers, and the acceptance of musculoskeletal pain, which can impede upon a positive outcome from the consultation being achieved.

Reassurance, both affective and clinical, was highlighted by both participant groups as being an essential part of a consultation for musculoskeletal pain with older adults.

Listening, non-verbal communication and displaying kindness from clinicians was reported to be effective in helping older adults build trust and rapport with their clinician, and having the condition diagnosed and explained meant that older adults felt secure in the prognosis and having a plan. These two themes interlink; such that reassurance is a critical part of resolving negotiations in a consultation through continuity of care and trust. The next chapter will present a third theme 'age-specific clinician concerns', derived only from the clinician focus group data.

Chapter Seven: Age-specific clinician concerns

7.1 Chapter introduction

The previous chapter reported on the first two themes from thematic analysis, 'negotiation' and 'reassurance'; presenting both patient and clinician views in order to understand both perspectives of the consultation. The theme discussed in this chapter, 'age-specific clinician concerns', was only identified in data from the clinician focus groups, and therefore only presents GP and physiotherapist views. There were four subthemes identified within this theme: 'the older adult label', 'physical health responsibilities', 'awareness of the patient's social situation', and 'issues with the health system', which will each be discussed in turn.

7.2 Overview of the main theme – 'age-specific clinician concerns'

This theme encapsulates a number of different factors that GPs and physiotherapists discussed that they felt led to complexity, pressure and stress in the delivery of care for older adults with musculoskeletal pain, including clinician feelings of responsibility, challenges in the consultation, clinical decision making, use of a risk stratification tool, and delivery of matched treatment options.

7.3 The 'older adult' label

The labelling associated with defining the term 'older adults' was a topic of discussion in each of the three focus groups. These discussions centred on how older adults could be categorised, whether this categorisation was clinically useful, the extent to which chronological age alone defined older adults and other factors that contributed to this label. It was highlighted that clinical complexity is not simply associated with increasing chronological age of the patient, but that there are a multitude of factors that

influence complexity; ranging from those on an individual level (such as physical health status) to wider social factors (such as socio-economic status).

In this thesis older adults are defined as being aged 65 and over, however participants in every focus group reported that within this category there is wide variability in older adults' physical capabilities and health status, highlighting the importance of not considering older adults as a homogenous group. Clinicians reported that, in their experience, these variabilities impacted upon the way that they approached a consultation, the dynamics of the consultation, and the decision-making about treatments:

I think it varies [...] say if you've got a 70 year old, you could have a 70 year old who's got loads of comorbidities, poor quality of care, and actually their musculoskeletal pain is at the bottom of this. Or you could have a 70 year old who is really active, not on any medication, walks loads of miles a day and having a knee problem will affect his life and impact on what you're gonna do for that patient which may be slightly different to someone where it's actually further down the list of other things.

Yasmin (GP; focus group 1)

Yasmin highlights how variation can exist between patients of the same age; it is not restricted to existing only between the 'younger-old' and the 'oldest-old' of the older adult age group, showing that focusing only on chronological age is problematic. Additionally, for patients presenting with multiple health conditions and higher levels of complexity, GPs have to prioritise conditions, which may result in musculoskeletal pain remaining as a lower priority, with treatments different from those solely aimed at addressing musculoskeletal pain.

Both GPs and physiotherapists described the variability between older adults mainly using examples of physical functioning, possibly reflecting the priority of physical function in defining the 'older adult' label within their patients:

Well it's quite variable, still get quite a lot fit people who are over 65, still competing, running races, triathlons, swimming, and then you get the other end of the spectrum so it's still quite widely diverse even at 65 in terms of their activities and things

Becky (Physiotherapist; focus group 3)

Becky expands upon this focus on physical function by highlighting the variation between older adults in relation to activities above and beyond everyday physical activity, showcasing some extreme examples of heterogeneity. This variability in physical function helps to describe how age is conceptualised, particularly in terms of the older age group:

See, in my mind, I don't see a 67 year old as being old [...] biological age and chronological age as well are very different but what I see now that's no age at all really. It's kind of once you're 75 and above okay that's fine, but we've got so many fit 80 year olds now living around at the moment so that elderly age group, it actually crosses almost four decades doesn't it really as well, you know, if you were to stratify that forward as well that would be spanning two... different types of categories really so I think there are kind of subdivisions even within that

Priya (GP; focus group 1)

Priya uses the concept of 'biological age', that relates specifically to physical function, to establish a separation from a patient's 'chronological age'. The use of these

separate terms reinforces Yasmin's and Becky's previous points regarding the importance of physical function and ability in defining 'older adults', and further emphasizes how older adults cannot be defined by chronological age alone. Priya also acknowledges the breadth of chronological ages that might be given the label of an 'older adult', in which generational differences (e.g. attitudes) also vary considerably. The consideration of different generations being part of the same 'older adult' label is discussed in more depth, later in this subtheme.

Clinicians highlighted key factors other than chronological age, that they consider contributing to a person being considered as 'older':

Researcher: When you say the very old, is there sort of a number?

Edward: If you've got those with comorbidities, I think it's not necessarily just old, it's the mixture of old and comorbidities, co-prescribing, all those different things

(Focus group 2)

Specifically, Edward comments on the inability to rely upon chronological age as a guidance of complexity, highlighting the interplay with other factors, such as comorbidity and polypharmacy, for this population. It was also highlighted that these factors are prioritised by GPs due to their subsequent effect on the complexity of treatment decision-making:

There's a bigger difference I think compared to a 30 year old, you know, they're still young, the management plan probably would be similar for quite a lot of different 30 year olds whereas, it's a bit different in the older groups

Yasmin (GP; focus group 1)

The wide variability in factors that contribute to the 'older adult' label means that GPs may need to think more carefully about effective management options for patients with

this label, than for younger patients, whose treatment plans may be more straightforward and similar.

Clinicians also acknowledged the impact of a patient's wider social context upon complexity and the label of 'older adult':

Ajay: To hear old, I guess you know, because of the demographics, old here is probably 80 plus-

Edward: 80 plus yeah I would say so in a lot of our demographic here

Ajay: -whereas, where I've worked in deprived areas it's sort of 55 plus, it's very different, so our elderly, so over the age of 65, you know 75, 80 they're super active like, days to London, they're just so-

Edward: We do have quite a split demographic in this in that we've got some people who are really quite well off and of those groups they're the super fit sort of last into a nice decade I think, and then the others that come off some of the other estates, mmm perhaps it doesn't

(Focus group 2)

Reflecting on the demographic split of the area that the practice serves, both Ajay and Edward link socio-economic status to ageing. Patients who live in more prosperous areas and who have a higher socio-economic status are considered fitter and healthier, and therefore the age at which they are considered 'old' is chronologically higher than someone of lower socio-economic status. Therefore, the label of 'older adult' may not only vary based on patient characteristics, but also on external factors including their social context. Sunil, a GP in a practice in the same area as Edward and Ajay, also reflects on the role of socio-economic status and physical function:

Sunil: ...we've got lots of elderly who are very fit and healthy, maybe that's just because of the area, we are in affluent areas but we've also equally got lots of young people who, who okay, are they frail or are they vulnerable, are they poorly?

Priya: Self-neglecting

(Focus group 1)

In addition to also emphasizing the role of socio-economic status and physical function in defining biological age, Sunil reflects on the impact of these factors for both older and younger adults, and how younger adults' poor health state is attributed, compared to older adults. This is highlighted by Priya, who links a person's likelihood of self-neglect in the management of their health with their wealth and social context. Particularly, the idea of frailty being a term reserved for older adults is questioned, and its application outside of this age group is discussed, reflecting that whilst complexity may be more prevalent in older adults, it is also important to acknowledge its presence and impact in younger adults.

Sunil also reflects on the transient nature of the label 'older adult' and associated behaviours, and the implications this may have for future healthcare services:

Sunil: It is all interesting isn't it because we talk about generations but, this elderly generation is going to change isn't it

Alison: Yeah

Sunil: The current young generation is not going to be young forever, so that generation is going to be elderly so what's gonna happen in the future for all of us, for all of us who are fit and able and so on and we go to the doctors perhaps more regularly than we're saying elderly patients would but then when

we become elderly, if we get that far, how are we still going to be the same or is our behaviour gonna change, or does it change as you age? I don't know.

(Focus group 1)

Sunil discusses the difference and change between the consulting behaviours of the current older adult generation and the fact that the younger generation may be more likely to go to see the doctor more regularly. He highlights that it is unknown whether this behaviour will change as generations age, and whether this may impact primary care in the future for 'older adults', especially if demand continues to rise. Whilst the discussions so far have focused on identifying the complexities currently associated with older age, it is important to remember that these are historically contextual; these issues and complexities are developed in response to social, economic and cultural contexts, and are therefore different for each generation.

In every focus group, both clinicians and physiotherapists compared 'older adults' to 'younger adults' in order to identify differences in patient presentation and treatment and establish their view of which factors contribute to a patient being considered 'older'. By referring to this separation, clinicians were then able to identify factors that specifically form the 'older adult' label. These comparisons were used to describe differences both for the assessment and management of musculoskeletal pain, for example, the impact of musculoskeletal pain on an individual's daily life and the consultation dynamics:

Whether there are more sort of psychological factors playing? I think if you compare the very old with the very young then I think there is because they've [younger adults] got lots more going on on the whole and the restrictions in their [older adults] life is probably to not be able to do the shopping or get them downstairs easily whereas the restrictions in life for the younger people is 'I

can't play my sport' and we may have an answer for that, you can go to physio or have your meniscus sorted out and then get back to it

Edward (GP; focus group 2)

In comparing the impact of pain between the younger and older ends of the chronological age spectrum, Edward illustrates that whilst the oldest adults were reported as experiencing significant limitation in their physical abilities, the impact of musculoskeletal pain for younger adults was considered to be less limiting. Therefore, for younger adults this leads to more standard treatment options being appropriate, showing the variation in management options for younger and older adults.

Clinicians also reflected on the differences between older and younger adults from a management perspective, with the options they felt able to suggest dependent on patient age. For example, clinicians perceived that older adults may be less likely to engage in psychological services for pain management than younger adults:

Andrew: I think older people are less accepting of this psychological approach, they want the more physical traditional, stick a needle in me and it gets better, you know that gets better-

Edward: Do something, [to] make me better. Tablets. Mmm.

Andrew: -whereas thinking about the pain and dealing with it in a different way I think the younger generation are maybe more accepting of that

(Focus group 2)

Whilst younger adults were reportedly more likely to be open to this psychological approach to treatment, clinicians felt that older adults would prefer more passive

treatments that focus on the physical problems. Despite previously discussing the variability that exists in the older adult population, the clinicians clearly felt that in relation to psychological approaches, in their experience, older adults generally have less acceptance of these treatments. This is therefore another issue which influences the negotiation taking place within the consultation, which was discussed in the previous chapter (section 6.3.3).

Furthermore, whilst initially discussing the variability and difficulty in labelling older adults, clinicians were able to draw distinctions between 'older' and 'younger' adults, although the parameters of these groups is unspecified. This is especially important when considering the initial assessment and diagnosis of musculoskeletal pain, as age has diagnostic relevance for clinicians:

Age is huge, yeah when we do our tutorials on musculoskeletal things it's one of the key things that helps us to narrow down a huge diagnostic field and say well these are the likely things, let's move through these

James (GP; focus group 1)

Despite the extensive discussion regarding variability between older adults and the numerous factors influencing whether a patient is considered 'old', GPs continued to feel that a patient's chronological age is a key factor in the assessment of musculoskeletal pain, which impacted upon their clinical decision making:

...what I think we should be doing in musculoskeletal medicine [...] is recognise the patient's age when they come with their presentation and realise that some conditions are actually more likely at certain ages, so if someone comes with back pain as an over 65 year old they ought to have a scan and blood test in

case they've got a malignancy and not be assumed it's mechanical just because the pattern is mechanical

James (GP; focus group 1)

Relying solely on the age of the patients, regardless of the complexity factors such as social situation or comorbidities discussed previously, James explains that certain assessment strategies are needed in relation to musculoskeletal pain. Despite this being a potentially extreme position due only a minority of pain conditions having detectable underlying causes and the financial cost of scanning, this was not met with disagreement from other clinicians. Discussion in the next focus group detailed the link between chronological age and physical causes of musculoskeletal pain:

I mean when you've got older people they are more likely to have degenerative stuff and I guess they're more likely to have degenerative joints and you're more likely to image them than you are somebody younger

Edward (GP, Focus group 2)

In their experience, GPs feel that certain management options are more appropriate based upon a patient's chronological age, particularly in relation to identifying the cause of musculoskeletal pain in older adults. This links to the pressure that GPs feel in identifying underlying health conditions in older adults with musculoskeletal pain, which is discussed in the next subtheme (section 7.4).

7.4. Physical health considerations in addition to musculoskeletal pain

As mentioned above GPs particularly view variability in older adults' physical capabilities and general health status as a key contributor to complexity in the management of musculoskeletal pain for older adults. Clinicians' concerns included the way these affect communication during the consultation, in addition to lowering the threshold at which GPs wanted to investigate potential serious underlying pathologies.

All of these factors added to greater feelings of responsibility towards managing some older adults with musculoskeletal problems.

Musculoskeletal pain may be a lower priority if the patient has other health conditions that are perceived by the clinician as more important to address:

...you could have a 70 year old who's got loads of comorbidities, you know, poor quality of care, and actually their musculoskeletal pain is at the bottom

Yasmin (GP, Focus group 1)

I know from my point as well, I'm probably at fault there, if you know, sometimes putting it to the bottom of the agenda, 'cause you're worried about their diabetes or hypertension

Priya (GP, Focus group 1)

Both Yasmin and Priya discussed the difficulties faced by GPs trying to balance and prioritise different health conditions in a consultation. Priya discusses the fact that musculoskeletal pain may be less concerning than other more severe comorbidities. Additionally, multiple conditions can impact upon musculoskeletal pain assessment making it harder to unpick which condition is responsible for which of the patient's symptoms:

Comorbidities. I think there's just a lot more that's going on that confuses, and, or, potentially makes pain present in a slightly different way as well, and trying to tease that apart can be quite a challenge

Priya (GP; focus group 1)

Being aware of the impact comorbidities can have upon musculoskeletal pain is an extra challenge and concern for GPs, providing a challenge in delivering an accurate assessment. Additionally, managing comorbidities in conjunction with musculoskeletal pain can impact the important factors in the relationship that a clinician has with a patient in a consultation, for example addressing patient expectations:

We focus so much on, frailty and the other comorbidity that we actually probably fail as GPs sometimes to actually address those things which might be very simple at face value [...] the [patient's] expectation of what can be provided, or what's on offer and what we're able to do

Priya (GP; focus group 1)

The concern expressed here is around how GPs manage multiple conditions alongside musculoskeletal pain which can leave limited time for some aspects of the consultation, such as reassurance, the importance of which is discussed in the previous chapter (section 6.4).

Polypharmacy can also present challenges for clinicians regarding the management of musculoskeletal pain for older adults. The negotiation that occurs regarding treatment options for older adults was discussed further in chapter six, however polypharmacy was specifically discussed as a source of clinical concern and complexity for GPs:

The other thing that adds complexity to comorbidity is polypharmacy. So, patients who have lots of multiple, chronic diseases, have lots of drugs that they're already taking for all these conditions

Sunil (GP; focus group 1)

In addition to managing comorbidities, Sunil highlights the complexity in managing these conditions which are often treated with medication. One specific complexity is prescribing painkillers due to polypharmacy in this population:

...you're trying to use opioids or weak opioids or strong opioids on people with chronic pain, that is probably not very good. And these are in an age group where you've got [Andrew: Other drugs], multiple comorbidities, other drugs that slow them down, make them fall down, give them another problem

Edward (GP, Focus group 2)

Interactions between multiple medications can have serious detrimental effects for older adults, which is a concern when considering analgesia as a treatment option for MSK pain. This has important implications for GPs' clinical decision making:

...being aware of all the drugs these patients are taking and how much of those are probably doing more harm than good, and that might actually interfere again with just simple things like, giving pain relief, you know, tolerability of drugs, you know in an elderly person you may not want to give a high dose of opioids 'cause it's going to harm them in a different way, and actually which one's better, harm them in one way or actually manage their pain, which is not a good quality of life to have, but sometimes it's a juggling act.. and that can be quite a challenge

Sunil (GP; focus group 1)

Addressing polypharmacy issues for older adults is complex, with responsibility falling on GPs to manage multiple challenging situations: needing to be careful regarding the medication that they prescribe; finding pain medication that will be suitable; having limited management options, and ultimately deciding whether offering pain relief medication will benefit the patient overall.

As previously discussed, communication and understanding are integral for effective consultations with older adults with musculoskeletal pain; however, older adults may have physical health conditions that cause extra complexity. Both GPs and physiotherapists highlighted different issues that can impact upon communication. For

GPs, as pain assessment relies on self-report, a patient having a lack of capacity can be challenging:

I think capacity. Patients present with sometimes difficulty in history giving, in elderly patients especially if they've got cognitive issues and in terms of not just musculoskeletal disorders, but generally if they are unable to provide a decent history, or cannot provide a history at all then that becomes complex doesn't it

Sunil (GP; focus group 1)

GPs reported that the reliance upon a self-reported history from the patient to make correct diagnoses and subsequently follow appropriate management plans can be challenging. This is particularly important for older adults who may not have full capacity to give this history, or have less accurate recall of the specifics of the condition, which can result in the GP being unable to assess the condition fully:

...[their] ability to provide you with a correct, direct history of presenting complaint and if they are unable to do so, then it will throw you completely and you may not make the correct diagnosis or follow a correct management plan for that patient.

Sunil (GP; focus group 1)

Sunil emphasises the importance of an accurate assessment and diagnosis in the clinical decision making of GPs; detailing that a lack of communication about the condition makes the assessment process much more complicated, impacting upon care provided going forward.

For physiotherapists, a key concern regarding communication difficulties was in relation to older adult patients who have hearing loss:

And of course the hearing aspect makes a difference as well, because in our cubicles, we only have certain clinics that are confined in four walls, the rest are sort of open spaces so it's a curtain that separates you from the next cubicle so hearing can sometimes be an issue.

Alison (Physiotherapist, focus group 1)

In contrast to GPs, Alison reports that physiotherapists operate in more of a shared space rather than consulting room. This can cause issues regarding confidentiality and distraction when consulting with older adults who have hearing difficulties; talking more loudly may mean that others can hear the discussion, creating a lack of privacy.

7.5 Awareness of a patient's social situation

Both GPs and physiotherapists reported that for older adults, an awareness of their wider social situation was important, as this can impact both on the consultation and the patient. There were two contrasting ways in which this was discussed – firstly, the influence of relatives on a consultation; and secondly, concerns about older adults who live alone.

The first point clinicians reported finding challenging was managing expectations from family members, which was identified as a source of stress in the second focus group:

R: ...just to start thinking is there anything that leaps out at you that makes managing their pain different from other patients?

Edward: Expectations. [Andrew: Yep]. Expectations of prescribing rather than [Andrew: Unrealistic expectations]. Unrealistic expectations.

R: Can I get you to expand on that a little bit?

Andrew: Relatives. Family. 'Something must be done, doctor!'

Edward: 'Something must be done'

Andrew: 'My mummy!' Or 'my daddy!'

(Focus group 2)

Whereas the GP and the patient engage in a negotiation (as discussed in the previous chapter), it was suggested that a patient's family can often present as demanding, particularly in regard to providing treatment. Clinicians reported that this can have a significant impact on the consultation. The previous chapter highlighted the difficulties faced by both clinicians and patients in negotiating a myriad of factors in relation to the assessment and treatment of musculoskeletal pain for older adults, and GPs particularly highlighted the extra pressure of engaging in additional negotiations with family:

Andrew: The old person may be saying 'look, it's not a problem, I'm gonna deal with it', but the relative is saying 'no, there must be something'; so it creates another layer or tier of work for us or pressure even, it's a pressure having a relative on the phone or, call back so-and-so you know, especially in this complaining age you know, you have to tread lightly because you get a letter of complaint if you don't conform to their demands-

Edward: Do what they want

Andrew: So it is an added pressure-

Edward: and have a good reason for not doing what they want

(Focus group 2)

Due to the pressure from family members, GPs reported feeling the need to justify their clinical decision making. Having a family member present who may not agree with the negotiation between the clinician and the patient can lead to dissonance within the consultation, for which the clinicians saw themselves as having the responsibility to de-escalate and manage:

Andrew: Sometimes it's unrealistic expectations, you know, 'do something my mummy can't walk', or you know, 'something must be done doctor' [...]

R: So it's about managing-

Edward: expectations again

R: -the older person's expectations and then-

Edward: And the younger person's expectations yeah

(Focus group 2)

Clinicians reported finding it challenging to manage both patient and family expectations and demands in a consultation when these are considered to differ from the GP's decisions and be perceived as unrealistic. However, despite this, GPs reported that it can be useful to have a family member present in the consultation:

Sunil: [is] somebody else pushing them or they're whinging or complaining to somebody else or their carer's brought them in or so on, because they're saying they keep complaining about pain. And I think, you know, I think, patients sometimes say things to us and say things to family members and carers very differently don't they, you know, they perhaps want to dial down, I know we've talked already about how patients dial up pain, and I think in some patients, certainly elderly patients perhaps they dial it down, they say 'I'm not in that much pain' and then you've got a family member sitting in the background saying 'but you're complaining about this pain all the time, you're saying how much agony you're in' and so on

R: Do you find a similar thing from the physio?

Alison: Definitely, and I think psychologically some people can actually play it up with their relatives, because it then it can mean that the relative is more supportive of them

(Focus group 1)

Having family present may help a clinician to assess the impact musculoskeletal pain is having on an older adult who is stoical in a consultation, as the relative may encourage the patient to report the pain to the clinician as they do at home. However, having relatives present may change the consultation dynamics for both GPs and physiotherapists, as patients may embellish their pain in order to validate their experience to the relatives that attend the consultation with them. Clinicians expressed that being mindful of this adds to the pressure to understand and assess the patients' pain experience, and provide appropriate management options.

The influence that family can have extends beyond their presence in a consultation. Clinicians reported that relatives may prompt older adults to talk about specific topics in the consultation:

...you do get some that come with their own agenda particularly if they've got relatives that have told them 'well you need to go and ask them this, this and this'

Becky (Physiotherapist; focus group 3)

Linking to Sunil's point above, even if relatives are not present in a consultation, they may still influence the consultation. However, this can create pressure for some GPs to be managing family expectations outside of consultations, especially when patients' families are able to contact them:

Well, you get calls from daughters and sons and relatives who're GPs and blah blah blah, always putting pressure on you, something must be done; four page letters, four pages of what I must do; often live miles away but still, only an email away.

Andrew (GP, Focus group 2)

Andrew explains how this creates an unrelenting pressure for him to be available to address family queries and demands outside of designated consultation time; and

subsequently this can have a detrimental effect upon the way that he views conversing with an older adult's family:

I always shudder when I see 'daughter of Mrs Ancient wants to speak to you' [chuckles] you know, get your courage up to ring them 'cause you know it's going to be something they're not happy about.

Andrew (GP; focus group 2)

Andrew's experiences demonstrate that whilst family members being involved can be helpful for some GPs, managing their expectations and requests can result in added work, pressure and stress for others.

Clinicians also discussed their concerns regarding being aware of older adults living alone, as how this affects the management of musculoskeletal pain, particularly for patients also experiencing depression or isolation:

Matt: I also think maybe the depressed, lonely, elderly patients feel more pain than other patients

R: Could you expand on that a bit more?

Matt: Or they cope less well with the same pain that someone who has a good support network would feel. Or they try and access our service more often. So whereas someone might speak to a family member about their pain and whatever, it's if they don't have anyone they phone the GP

R: Okay. So it's almost as if the primary care service is there as a supportive network as well as just for health concerns?

Matt: Yeah quite often

Yasmin: Yeah

Priya: I think it's just recognising that, you know, I suppose isn't it, recognising who is and signposting people and that's a challenge

(Focus group 1)

GPs reported that older adults living alone may rely on primary care as a support network in lieu of family or friends, and especially for patients with depression or isolation, this can influence their pain experience and management strategies, adding further complexity. However, it was reported that disentangling this and also providing appropriate management options in a consultation can be difficult:

These elderly patients, it does take a lot longer, they wanna sit down and have a chat and they do mention their other problems as well before they sometimes get to it, and then you are trying to rush through talking about possible lifestyle changes and exercises they can try at home in much less time, so that actually does feel it makes it a lot more difficult to manage

Omar (GP; focus group 2)

For GPs, accommodating the social support needs of older adults whilst also delivering care and management for their musculoskeletal pain can be difficult to balance, particularly when consideration needs to be paid to other complexities in the consultation. Physiotherapists also discussed providing social support to older adults:

...yeah you probably get a lot more of the older adults are just quite happy to go with what you want and some of them that are living on their own I think it's actually just 'I am quite lonely and quite happy to come and talk to you for 30 minutes regardless of whether you help me with my pain or not'

Becky (Physiotherapist; focus group 3)

Despite being referred to physiotherapy for help with their musculoskeletal pain, older adults living alone may prioritise social support and communication with the physiotherapist as more important than pain relief. This reflects the importance of affective reassurance and the interpersonal relationship with clinicians for older adults, as discussed in the previous chapter. Becky continues to explain how her approach to the consultation changes for older adults:

Well, they probably just come with different complexities really. Just some of them are on their own so that plays a big part, if they're struggling to function they're struggling to survive, might not have that close network whereas that younger generation, not all of them 'cause there are younger people who are on their own who haven't got that network, so that's probably one of the things you take into consideration is actually with an older adult is checking how are they managing at home whereas you might not go down that road so quickly with a younger adult

Becky (Physiotherapist; focus group 3)

Becky highlights the importance of physical function, linking back to clinicians' immediate focus on physical function for older adults with musculoskeletal pain. For an older adult living alone, physical function is integral to being able to continue living an independent life. Therefore, due to the potential severity, clinicians may be more likely to focus on and assess the social situation of older adults than younger adults presenting with musculoskeletal pain, as this can skew the dynamics and priorities of the consultation. Additionally, clinicians' management plans may need to be amended if their patient is an older adult living alone as the role of the clinician may switch into providing more social support than clinical knowledge and pain relief. Knowing this information about their patients reflects the importance of continuity of care for older adults, as discussed in the previous chapter (section 6.5).

7.6. Issues with the health system

Previous discussion in this chapter has highlighted the variety of duties that clinicians fulfil in the consultation. However, throughout the focus groups clinicians discussed concerns regarding systemic issues in meeting the needs of older adults. One area of concern for GPs, particularly reported in the third focus group, centred on patient expectations of the GP's role in the provision of care for musculoskeletal pain:

Very recently there's a public outcry that GPs weren't trained in nutrition as if somehow it was our fault that people chose to eat the wrong kinds of food when they were young all the way through their adult lives and I just wondered at what stage we became responsible for everything that ever went wrong

Callum (GP; focus group 3)

Callum describes that patients often have unrealistic expectations about the GP's role in their own health, and subsequently rely on the GP rather than taking personal responsibility. He explains this further in relation to the role of weight reduction as part of the treatment for older adults with arthritis:

The big message for a lot of people with arthritis is we need to change your lifestyle not we need to fix your joint and I'm afraid that falls on deaf ears so often so it's an incredibly complex presentation now 'my knee hurts doctor' you can be lifting a scab to a huge lifelong wound and it can be a very long consultation

Callum (GP; focus group 3)

Addressing an older adult's lifestyle choices which have evolved over their lifespan can be challenging for GPs, especially in time limited consultations. This reinforces Callum's point above, in which he discussed that often patients wish to rely on the GP for change, and tackling this can be extremely complex.

GPs also expressed concern and frustration about the lack of onward specialist services to provide treatment, particularly given the desire to reduce the use of prescription painkillers for musculoskeletal pain, as discussed in the previous chapter (see 6.3.3):

R: So just thinking, is there anything that you, in terms of the [STarT MSK] tool or the [recommended matched] treatments that you would add in or change for older adults or do you think, it addresses what you would want it to address?

Ajay: I think that personalised exercise programmes, I think that should be number one but there just isn't the resource to be able to do that. If we're designing the whole system I think that's the [hits pen on table], that would be number one wouldn't it.

(Focus group 2)

Despite GPs identifying the need and being willing to prescribe more lifestyle interventions for older adults to manage musculoskeletal pain, it was felt that this is not supported well by the current healthcare system, and subsequently unable to be provided through the stratified care matched treatment options. Callum discusses the interpersonal impact that having only limited availability of non-pharmacological management options has on the consultation:

R: If, so if you were thinking of moving away from the analgesia, for older adults what sort of management would you then put with that?

Callum: I mean it's difficult isn't it. I think it's a difficult process because what you're trying to get across is that we're being kind and considerate and this isn't cutting them short and them having pain may be the burden they have to carry because of the body they're living in and that that doesn't mean life's over, it might be better than sleeping in an armchair zonked on opiates for the rest of their life. But it's a complex conversation, I don't know what the right answer is; I don't know what other GPs are doing

(Focus group 3)

Callum discusses that a key priority for GPs is to reduce the amount of opiates prescribed in order to reduce dependency on these, however there is a worry that patients may perceive this as GPs lacking compassion and care in the consultation. This may be especially of concern when there is a lack of suitable alternative treatments available to replace opiates. This leaves GPs having to have difficult conversations with some patients about helping them to accept their pain as a long-term condition.

Furthermore, it was reported that movement of specialist services away from smaller towns into bigger cities poses problems for GPs wishing to refer older patients. It was felt that older adults can struggle to access these services; for example, the discontinuation of giving corticosteroid injections in the town where the GP practice was located, created a barrier for older adults being able to so easily access this service:

That's what I'm saying so I'm just disappointed that [town] won't do it anymore, whereas [city] will. Telling a 95 year old you're going to [city], it's a pain to get them there, it's a shame that [town] have stopped doing it.

Andrew (GP; focus group 2)

Removing these services from local areas can have a significant impact upon older adults who may be restricted in terms of transport and physical function. This compounds the already limited options that GPs have for management of musculoskeletal pain for older adults. Moreover, some specialist services are stopped altogether, further limiting the onward treatment options that GPs are able to pursue. This was discussed particularly in relation to surgery. Surgical options for musculoskeletal pain are already limited to only the most severe cases; with further restrictions for older adults:

I've got an 88 year old with a disc compressing on both sides, more on one, and referring her urgently, it's gotten worse in the last couple of years, [neurosurgeons are] just not interested, so what do you, you know, we were saying like, medically, and they're back here and like what do we do? Gabapentin?

Ajay (GP; focus group 2)

The lack of onward services places pressure on GPs to manage a patient's musculoskeletal pain within general practice, and can result in GPs using a treatment option they would have preferred to avoid, such as a strong neuropathic medication. The limitation of onward services to treat musculoskeletal pain may also be exacerbated by restriction in older adults' preferences for treatments, as discussed in the previous chapter in the 'treatment negotiation' subtheme of negotiation (see 6.3.3).

GPs also perceive having responsibility in the management of patient expectations following treatments from other healthcare professionals outside of general practice. This may be particularly challenging to manage if the treatment sought elsewhere has not improved the patient's pain. For example, when reflecting upon patients who had been to local osteopathy services, Edward discusses the impact that this has on their consultation with a GP:

R: Do you tend to see them [older adult patients] even if they have been down that private route?

Edward: I think you tend to see that more if it has failed to resolve things. And then you end up in the position of well they've done all that stuff and now you're even in a worse position because that hasn't helped

(Focus group 2)

In addition to managing the complexities of a consultation in general practice, GPs may have to manage the expectations and beliefs patients have developed following

consultations with other healthcare professionals and subsequent treatments received. Patients whose pain has not been helped by these alternative treatments may present with the expectation that their pain has a serious underlying cause:

But the osteopathy, there is a pressure sometimes that when they come out of that system that the next step is going to be [Andrew: Must do something] imaging of some sort ... I had a patient the other week [...] he's got some leg pain but it's not consistent, it's not going to be neurosurgical, it's gonna be mechanical back pain that's just difficult. But the implication is 'we need to look', because '[the osteopath's] failed with 450 quid's worth of manipulating you' it must be something important.

Edward (GP; focus group 2)

These expectations create further difficulties in the negotiation of treatment options between patients and clinicians, particularly in relation to imaging. It is not only through alternative treatments such as osteopathy that GPs have to manage the implications of other healthcare professionals' decisions. In this particular example of osteopathy, the implications may be focused on patient perceptions of their pain and expectations, but GPs also have to be aware of any medications given to older adults by other healthcare professionals, such as pharmacists:

The other is problems generated by chemists who might often say you must see your doctor, but these chemists are slapping out Voltarol gels for elderly people who, you've got to realise that that gets absorbed systemically and you've also got the risk of bleeding and all the rest of what goes with it so you have to put the brakes on some of those things as well that chemists throw people our way

Andrew (GP; focus group 2)

Andrew details the concerns GPs have regarding treatments given by pharmacists for older adults, particularly regarding the physical effects and interactions, and the responsibility he perceives to identify and rectify this.

7.7 Chapter conclusion

This chapter has presented clinicians' views regarding the challenges and complexity in consultations for older adults with musculoskeletal pain. Clinicians reported that identifying the 'older adult' population was more complex than attributing this label based on chronological age, with factors such as physical function and comorbidity influencing clinicians' perceptions of older age. Yet, chronological age was important for GPs in the assessment and diagnosis of musculoskeletal pain, given the higher risk with age of potential serious underlying conditions. Complexity, in the case of older adults with musculoskeletal pain, was influenced by factors such as comorbidity, polypharmacy, attendance of family members and the patient's living situation, which clinicians found difficult to balance within the consultation. Addressing these factors requires clinicians to be able to adapt their approach in a consultation which often resulted in priority being given to other factors rather than the musculoskeletal pain; contradicting the thorough assessments GPs described ideally wanting to undertake. Finally, clinicians also felt they were limited in the management options they were able to offer, and unsupported by the healthcare system in reducing painkiller prescriptions. The next chapter will discuss and integrate the quantitative and qualitative findings in order to address the overall aim of the thesis, before evaluating the implications for stratified care and suggesting future research.

Chapter Eight: Discussion

8.1 Chapter introduction

This final chapter summarises and discusses the findings of the thesis in relation to the aim, research questions and wider literature. This is followed by the implications of the findings for stratified care, suggestions for future research, strengths and limitations of this thesis and my personal reflections of the research.

The aim of this thesis was to explore the use of stratified primary care for musculoskeletal pain for older adults. This was achieved through a sequential mixed methods approach, exploring the following research questions:

1. Are the clinical profiles of patients with musculoskeletal pain stratified into low, medium and high risk subgroups different between older and younger cohorts?
2. What is the discriminant and predictive validity of the STarT MSK tool across ages?
3. What are older adults and clinicians' views and experiences of factors that contribute to complexity in musculoskeletal pain?
4. What do older adults and clinicians see as constituting a good GP consultation for musculoskeletal pain for older people, and what are considered acceptable outcomes?

The findings to these research questions will now be discussed in detail and situated within the existing research literature on primary care, stratified care, pain experience and coping, and health psychology.

8.2 Discussion of thesis findings

This section will discuss the thesis findings in turn; focusing first on the quantitative results followed by the qualitative findings which will be discussed in comparison with stratified care and wider literature throughout. In addition to the discussion of the findings relating directly to the research questions, a section discussing the findings in relation to stratified care specifically follows.

8.2.1 Research Question 1

Are the clinical profiles of patients with musculoskeletal pain stratified into low, medium and high risk subgroups different between older and younger cohorts?

Participants in the Keele Aches and Pains Study (KAPS) and Treatment for Aches and Pains Study (TAPS) studies were dichotomised into older adults (≥ 65) and younger adults (< 65). There were no significant differences between these groups in pain intensity across any risk subgroup, showing that older adults report the same amount of pain as younger adults. However, there were significant differences between older and younger adults in a number of psychosocial factors. Older adults reported significantly higher average comorbidity counts, lower catastrophising and mental health scores, and higher proportions of low health literacy than younger adults. The lower catastrophising and mental health scores reflected that older adults reported that they experienced lower levels of depression and anxiety due to their pain than younger adults. However, despite these results, there were no significant differences in quality of life scores across ages. Importantly, as these same findings were observed across

every risk subgroup, it can be concluded that these differences were not due to the risk subgrouping based on the STarT MSK Tool.

The finding that pain intensity did not differ between older and younger adults in any risk subgroup is crucial in pain research, as multiple reviews of the literature have highlighted mixed results regarding how the pain experience and characteristics vary, if at all, with age (Herr & Garand, 2001; Lautenbacher et al., 2017). A recent systematic review concluded that ageing reduces pain sensitivity for lower pain intensities (Lautenbacher et al., 2017). The results presented in this thesis supports this, as older adults reported significantly lower scores of pain bothersomeness (medium and high risk subgroups) and interference (all risk subgroups), despite there being no differences in self-reported pain intensity. This thesis builds upon the previous research as much of those studies were cross-sectional and experimental, assessing heat, mechanical or electrical pain, which may not accurately represent real-life pain conditions and experiences. The measurement of pain intensity used in this study was an average of current, worst and least amounts of pain experienced over the previous month, giving a more accurate and representative report than one cross-sectional rating of current pain only (Dunn, Jordan & Croft, 2006). As pain intensity was the same across ages, this indicates that differences in the experience of musculoskeletal pain by age result from other variables, such as psychological or social factors.

Indeed, there were significant differences in psychological and social factors for older adults compared to younger adults. In terms of the psychological measures, there was an increase in mental health scores (indicating better mental health), and a decrease in pain catastrophizing, anxiety and depression for older adults compared to younger and middle-aged adults. Self-reporting of anxiety, depression or stress comorbidities also decreased significantly as age increased. Although a reason for this cannot be drawn from this data, there are several possible explanations for these findings. Firstly,

although anxiety and depression are common in older adults with musculoskeletal pain (reported by one in five older adults) the general trends of wellbeing in the UK (including life satisfaction, feeling worthwhile, happiness, reduced anxiety) increase with age (Office for National Statistics, 2018). This pattern is also evident when the participants are divided into narrower age categories. Furthermore, it is important to recognise that previous literature has reported that older adults may be stoical in their perceptions and discussion of mental health and pain which influences how they report these domains (Cornally & McCarthy, 2011; Molton & Terrill, 2014). This is discussed further in relation to the third research question, exploring factors of complexity for older adults with musculoskeletal pain (section 8.2.3).

Additionally, older adults also reported significantly less pain catastrophizing and higher pain self-efficacy than younger adults, especially the 85+ age category. This adds to the existing body of literature reporting that younger adults catastrophize more about pain than older adults (Turner, Mancl & Aaron, 2004; Kneeland, Griffin, Taghain, Weiss & McHugh, 2019). These findings regarding mental health, catastrophizing and self-efficacy may be linked to resilience. Older age is often linked with resilience, especially when observed from a lifecourse perspective, as older adults have more 'life experience' than younger adults, therefore have more resources to draw from (Gooding, Hurst, Johnson & Tarrier, 2011). This is pertinent to many different forms of illness, especially serious and chronic illness in older adults. For example, when interviewed after having had a stroke, older adults interpreted the stroke as 'just another thing to deal with' as hardships and illnesses previously experienced throughout their life had made them more resilient when facing current illnesses (Faircloth et al., 2004). This concept is termed 'biological flow'; illnesses are incorporated within the flow of a person's biography, and the experiences can then be drawn upon later. In chronic pain, resilience is linked with better coping styles, pain attitudes and beliefs and less catastrophizing in older adults, due to the previous

experience in managing and the development of effective coping strategies (Karoly & Ruehlman, 2006; Wiles, Wild, Kerse, Allen, 2012). Specifically, when discussed during focus groups and interviews, older adults identified both internal and external resources of resilience. Internal sources of resilience included personal attitudes to ageing and obstacles; identifying and valuing positive occurrences; and having a purpose. External sources of resilience were primarily social and community based; having friends, neighbours and doctors that they felt able to turn to for both practical and emotional support (Wiles et al., 2012). This is essential for older adults; as loneliness and isolation are linked with increases in depression, pain, sleep disturbance, physical function decline and disability (Choi, Irwin & Cho, 2015; Emerson, Boggero, Ostir & Jayawardhana, 2017). Whilst not measured directly in this dataset, when asked about help for daily tasks and emotional support, older adults largely reported that they either did have the support they needed, or that they did not need support, which would appear to indicate that isolation was not a significant factor amongst this group. However, as described above, some of this may be due to stoicism, as older adults have reported considering themselves to be a 'burden'; being unwilling to disclose their pain to their families or healthcare professionals (Cornally & McCarthy, 2011; Gammons & Caswell, 2014). Therefore, this is an area that requires delicacy by clinicians when older adults present to primary care.

Despite the age differences in physical, psychological and social factors, there was little variation in quality of life scores, suggesting these factors may not be important to older adults when it comes to assessing their quality of life, or that quality of life measures are not very sensitive to psychological constructs. There are mixed findings in the literature around what factors most affect quality of life for people with chronic pain. Pain severity has been directly linked to quality of life, with an increase in pain intensity leading to a decrease in quality of life (Leadley et al., 2013). However, it has also been reported that pain cognitions and beliefs, particularly catastrophizing, are

more associated with poorer quality of life for chronic pain patients than pain intensity (Lame et al., 2005). The results from this analysis suggest that pain characteristics may influence quality of life more than pain beliefs, as despite age differences in psychological and social factors, quality of life scores did not differ significantly. Conversely, larger proportions of those aged ≥ 65 rated their health as 'poor' or 'fair' compared to younger participants, despite reporting no differences in pain characteristics. A key element of health and wellness is physical function, with older adults reporting that being able to continue with everyday activities and remain independent was essential to their quality of life (Grime, Richardson & Ong, 2010). This may provide some explanation for these lower health ratings, as findings showed that physical function decreased, and the number of comorbidities increased with age; factors that impede an older adult's ability to live independently.

A final important result to discuss is the increase in the proportion of older adults reporting low health literacy; in every risk subgroup adults aged 85 and over reported the highest proportions of low health literacy, indicating that they needed help when reading medical information (e.g. pamphlets, instructions) (see 4.6.4). Health literacy is an important factor to consider in healthcare services; older adults with inadequate health literacy have worse physical function, mental health, knowledge of medications and higher mortality rates than those with adequate health literacy (Bostock & Steptoe, 2012; Chesser, Woods, Smothers & Rogers, 2016; Wolf, Gazmararian & Baker, 2005). The findings from this study, combined with those of previous literature, highlight the necessity for clinicians to consider older adults' health literacy in primary care consultations; especially for the oldest old. The implications of this for stratified care is discussed later in this chapter (see 8.3.1).

This thesis defined older adults as aged 65 years or older. When the clinical profiles were explored with the participants divided into narrower age categories, there were

several factors where there were clear differences between the younger and older cohorts. The age cut points for these factor differences were mainly observed between the 55-64 and 65-74 year age categories (for example pain catastrophising), which supports this definition. One reason for this may be that the retirement age in the UK is currently 67, and previous research has shown that retirement is a significant period of transition and can be difficult to cope with as work is often seen as a distraction and a purpose, even for those experiencing pain. Qualitative studies highlight that older adults who are no longer working can report fewer distractions and less of an everyday routine, with an increase in sedentary behaviours and feelings of isolation, which may lead to an increase in pain cognitions (Ojala et al., 2015; Van Dyck, Mertens, Cardon, De Cocker & De Bourdeaudhuij, 2017).

However, this distinction between older and younger adults was not always clear. Often, there was a trend for scores to change slightly between age categories or have extreme scores for the youngest and oldest age category, rather than a specific cut point. This reflects previous research in which the definition of 'older adults' has varied, as discussed in Chapter One (see 1.3). Focusing on specific age categories, the 18-24 and 85+ categories often reported scores at the extreme ends of the scale indicating that matched management strategies for these groups as part of a stratified care intervention may need to be adapted to meet their needs (discussed further in sections 8.3 and 8.4). However, it is important to note that these two age categories contained the smallest numbers of participants, therefore these results may need to be taken with caution.

A number of the findings relating to this research question also crossover with the third and fourth research questions, which explored factors affecting complexity in older adults with musculoskeletal pain, and the elements of a good consultation. Therefore,

further discussion about these factors (e.g. mental health, comorbidity) is presented in sections 8.2.3 and 8.2.4.

8.2.2 Research Question 2

What is the discriminant and predictive validity of the STarT MSK Tool by age?

The second research question investigated the discriminant and predictive validity of the STarT MSK tool, which was defined as the ability of the tool to predict high pain intensity (defined as a score ≥ 5 on a 0-10 numerical rating scale) at six months, and to discriminate between participants stratified into low, medium and high risk subgroups at baseline. Analysis was undertaken in three datasets: Keele Aches and Pains Study (KAPS; self-reported cohort study recruited from GP practices); Treatment for Aches and Pains Study (TAPS) self-report (baseline questionnaires in the TAPS pilot study); and the TAPS point-of-consultation dataset (collected by GPs in the intervention arm in a consultation for musculoskeletal pain). Two analyses by age were undertaken, firstly for older (≥ 65) and younger (< 65) adults, from which the main conclusions are taken; and secondly exploratory analysis by narrower age categories (18-44; 45-54; 55-64; 65-74; 75+). Overall, the STarT MSK Tool demonstrated excellent predictive and discriminant validity in the KAPS dataset for both older and younger adults through the area under the ROC curve (AUC) statistic (< 65 AUC=.869; ≥ 65 AUC=.870) but decreased in validity for older adults in the TAPS point-of-consultation dataset (≥ 65 AUC =.785).

Focusing on the TAPS baseline dataset, as the TAPS pilot intervention dataset has too small numbers to draw effective conclusions from, the decrease in the predictive validity of the tool can be seen. Whilst the discriminant validity stayed relatively high, the amount of variance predicted by the STarT MSK Tool for both older and younger adults halved from the KAPS to TAPS datasets, from accounting for 43% and 45% of

the variance respectively in the KAPS dataset to 11% and 24% in the TAPS point-of-consultation dataset. One potential reason for this reduced predictive performance for older adults may be the lack of social factors included in the tool which may have more of an influence at certain times in the lifecourse of individuals. The impact of pain upon social factors is significant for both of these age categories. The 65-74 age category is also associated with a period of transition between working and retirement which can facilitate loneliness and lack of social support – factors which are known to be barriers to improvements in chronic pain (Carrington Reid, Eccleston & Pillemer, 2015; Ferreira & Sherman, 2007; Wenger, Davies, Shahtahmasebi & Scott, 1996). Indeed, as review of the frailty literature indicates, social factors are especially important for older adults, particularly in relation to poor outcome. As psychological and social factors are established as musculoskeletal pain predictors for older adults, it is imperative that they are included in prognostic tools.

When examining the narrower age categories, the TAPS-pilot baseline dataset will be used, as the numbers for the TAPS point of consultation dataset are too low to draw effective conclusions from. However, it is important to note that even when using the TAPS-pilot baseline database, some of the number of participants in the stratas are incredibly small. This is due to an unexpected change in risk stratification proportions between KAPS and TAPS datasets. Therefore, the findings discussed below are exploratory and should be treated with caution.

Variation in the predictive and discriminant validity of the STarT MSK Tool across age categories can be seen. In the 18-44 age category the tool had reduced validity; accounting for low proportions of variance in the outcome (~15%), and was unable to discriminate well between low, medium and high risk patients (AUC=.682). Similar to the discussion above, the lack of social factors may influence the validity of the tool for younger adults; pain can significantly impact upon their social life and social

development, ability to attend university and work, and lead a 'normal' life (Fegran et al., 2019; Slater et al., 2016). In comparison, the AUC values for the other age categories ranged between .731 and .732, indicating acceptable validity. Area under the curve (AUC) values below .70 suggest that a predictive model needs improvement (Steyenberg et al., 2010), although ideally for use in AUC values should be as high as possible to avoid misdiagnosis, and whilst these results are 'acceptable', there is improvement to be made across all age categories.

One factor to consider across all three datasets is the influence of the way in which the STarT MSK Tool was completed. Although the numbers of participants in the TAPS-pilot intervention dataset are too small to draw strong conclusions from, it may be that participants in some age categories reported the impact of their pain in a different way depending on the format of the tool (e.g. a questionnaire completed at home in private vs verbally answering questions in front of their GP in a consultation). Potentially, if this was the case, then for participants who may be more stoical in front of their GP the tool would be less predictive as it doesn't reflect the 'true' experience.

It is important to acknowledge that there were differences in the risk stratification proportions between datasets. In KAPS, 32% of participants were stratified into the high risk subgroup compared to only 14.5% in TAPS self-report and 11% in TAPS point-of-consultation. Conversely higher proportions of participants were stratified into the medium risk subgroup in TAPS self-report (55.6%) and TAPS point-of-consultation (52.5%) than KAPS (42.7%). Of note is that this is a difference between datasets, rather than method of data collection (i.e. self-report vs point-of-consultation) or the clinical setting. One reason for this may be that the TAPS self-report data was collected after the consultation in which stratified care was used; participants may have been reassured in the consultation and any acute issues may have been addressed

therefore self-reports led to lower risks scores when compared to participants in the KAPS dataset.

There were also differences in risk stratification between the TAPS point-of-consultation dataset and the other datasets when comparing age categorisation. When examining the high risk subgroups, the TAPS point-of-consultation dataset had higher proportions of the 18-44 age group and lower proportions of older adults (≥ 65) stratified into this subgroup than in the KAPS and TAPS self-report datasets; suggesting that the context in which the tool was completed – being asked by a GP in a consultation compared to a written questionnaire at home – may affect reporting, supporting the considerations made above; that older adults are more stoical in their reporting in a GP consultation when asked in a questionnaire.

As discussed in Chapter Two, although multiple prognostic tools for back pain have been developed, the most widely used are the Orebro Musculoskeletal Pain Screening Questionnaire (OMSPQ) and STarT Back. Both of these prognostic tools have very good discriminant and predictive validity, but during their development were only tested in populations aged below 66. The findings from this study examining the STarT MSK Tool adds to the previous work in this area by showing the importance of not only including older adults in the validation sample of a prognostic tool, but also stratifying analyses by age. Specifically, the findings from this study showed that the way in which a prognostic tool is completed (e.g. written in a questionnaire compared to verbally to at clinician) may be an important factor to take into account; especially for older adults. This is particularly important as older adults are among the highest consulters in primary care for musculoskeletal pain (Jordan et al., 2010), so any prognostic tool developed for use in primary care needs to be tested in this context.

A final factor to consider is the use of pain intensity as the predicted outcome measure for the STarT MSK Tool, which may not be the most useful outcome. Indeed, the STarT Back Tool used physical function as the predicted outcome measure due to its importance in preventing chronic back pain (Hill et al., 2008). This corroborates with the best recommendations for improving chronic pain being physical activity and exercise, and encouraging people to 'move despite the pain', rather than reducing the pain itself (Abdulla et al., 2013; Versus Arthritis 2021). Furthermore, much of the literature addressing chronic pain in older adults focuses on physical function, due to the associations with severe consequences disability, frailty and falls. Therefore, it may be that for older adults, a more appropriate and clinically useful outcome to predict is physical function, rather than pain intensity.

8.2.3 Research Question 3

What are older adults' and clinicians' views and experiences of factors that contribute to complexity in musculoskeletal pain?

Complexity was discussed in terms of both assessment and treatment of musculoskeletal pain for older adults. Two themes directly informed this research question: negotiation and age-specific concerns.

8.2.3.1 Assessment

Conversations about mental health were a source of complexity and dissonance reported by both clinicians and older adults. The majority of older adults in this study denied being 'depressed', some quite vehemently. Rather, mood was expressed through descriptive words such as feeling 'frustrated', 'irritated', 'angry', 'down' or 'worried'. This was supported by clinicians reporting that although they would expect anxiety and depression to be prevalent for older adults, this often is not expressed through the clinical labels, and were more likely to be phrased through other terms,

such as 'hacked off'. This way of describing mood could be interpreted as a way to minimise and normalise the impact of pain, and was further supported by multiple participants describing talking about their mental health as 'moaning'; chiding themselves for it. Using this terminology brings the emotional impact of pain down to a normal, daily life bother, rather than an issue to be addressed.

There may be multiple reasons for this. Clinicians reported that older adults are more likely to be stoical in their descriptions of how pain is affecting them, and that it can be a challenge to instigate a discussion about this in the consultation. This has been recognised in previous literature; older adults are less likely to seek help for their pain, feeling that it is inevitable and that they should cope with it themselves (Cornally & McCarthy, 2011; Molton & Terrill, 2014). Additionally, older adults may feel that there is stigma associated especially with mental health, particularly when using medicalised labels such as 'depression'. Indeed, only a minority of older adults in this study were comfortable using the 'depression' label, instead using words such as 'irritable' or 'frustrated', resonating with previous research in this area. In particular, older adults with and without pain may not recognise that their symptoms qualify as 'depression', labelling their emotions as 'low mood', 'stress' or 'distress' (Chew-Graham et al., 2012; von Faber et al., 2016). In multiple studies, older adults have voiced their surprise at being given a diagnosis of depression, even mild, as they perceived depression as a constant state of negativity (Nair, Bhanu, Frost, Buszewicz & Walters, 2019; von Faber et al., 2016), which was also expressed by participants in this study. Perceiving depression this way can lead older adults to believe that they have no legitimate reason to seek help from their general practitioner, resulting in older adults managing their mood alone and not receiving treatment (Chew-Graham et al., 2012; Wetherell et al., 2009).

A salient finding in relation to this is that older adults were more likely to report an impact upon their mental health in response to the STarT MSK tool's 'mood' questions than in the face-to-face interview. In the STarT MSK trial, this question is framed differently for the self-report and point-of-consultation in recognition that responses may be different depending on the contexts in which the questions are asked (i.e. privately on a questionnaire versus in front of a doctor). The two questions are: 'Has pain made you feel down or depressed in the last two weeks?' (self-report), and 'Have you felt really anxious or low in your mood because of your pain?' (point-of-consultation). There may be numerous reasons for this. Firstly, both versions of the question include terms other than 'depression' (i.e. down, low in mood), which may be more accessible for older adults aligning with their descriptions of mood. A second reason may be that as the question was asked as part of a standardised assessment, older adults did not feel that they were being singled out or judged; rather that this question is being asked to everyone. This may mitigate some of the stigma older adults feel around the discussion of mental health. Thirdly, the question in the STarT MSK tool simply requires a yes or no answer rather than an open question. These reasons may have led to older adults feeling more comfortable to disclose these issues in the consultation. Therefore, it is possible that the STarT MSK tool could help GPs start a conversation about the impact of pain on mental health, as a number of clinicians reported finding it challenging and complex to initiate these with older adults in the consultation. This is not uncommon; often the presence of physical health problems takes precedent in a consultation, and in conjunction with the unlikelihood of an older adult patient to initiate the conversation themselves, often depression and other mental health conditions are not addressed (Murray et al., 2006).

However, it is important to recognise that pain by definition is not a pleasant experience, and therefore negative emotions are a normal response. The majority of older adults in this study had experienced musculoskeletal pain for a number of years,

impeding upon their abilities to carry out everyday tasks such as doing the laundry or gardening. Therefore, a pertinent question is whether these self-reports of low mood need to be 'medicalised' as depression. It is important to recognise that although the terms older adults use to describe their mood are associated with the symptoms of depression, this is not necessarily indicative of the condition. Additionally, some GPs did recognise the alternative language that older adults tend to use, and therefore it could be seen that as older adults are discussing their emotional wellbeing, without using the 'medicalised' terms. In light of these findings, the use of 'medicalised' terms may not be useful or suitable in these context altogether, and the use of other terms is strongly recommended.

For clinicians, multimorbidity is a key contributor to complexity in consultations with older adults. Older adults are more likely to present with multiple health conditions than younger adults, including cardiovascular disease, breathing problems and diabetes. Having to manage multiple health conditions in one consultation makes these consultations complex for clinicians, and can create dissonance between the GP and older adults. GPs in this study reported that often musculoskeletal pain fell to the bottom of their agenda due to the need to attend to more serious health conditions such as diabetes or hypertension. This finding has been identified previously in primary care literature. Qualitative studies with GPs utilising both focus groups and interviews report that GPs feel responsibility to manage health conditions that are more dangerous for the older adult and have a risk to mortality. In contrast, older adults' priorities for a consultation are for health conditions for which the symptoms are acutely affecting quality of life, autonomy and independence – such as musculoskeletal pain (Hansen et al., 2015; Loffler et al., 2012). This discordance of priorities can then cause dissonance in the consultation, as older adults do not feel as though they are being listened to and GPs feel pressured to 'keep tabs' on all ongoing conditions. A key study to discuss is that of Paskins, Sanders, Croft & Hassell (2015), who video-

recorded osteoarthritis consultations in primary care, and then interviewed both the GPs and patients. In their study, dissonance between GPs and patients resulted from GPs normalising osteoarthritis, and therefore giving reassurance when patients were not seeking reassurance. In comparison, dissonance in this study was mainly identified in the negotiation of mental health factors, expectations of the consultation, and treatment options (discussed in the next section, 8.2.3.2). This emphasizes the issue of dissonance in the primary care setting, yet also demonstrated how variable this can be depending upon the context of the consultation. Communication was considered the key factor in the resolution of dissonance in the Paskin et al., (2015) study; similarly, communication, trust and shared responsibility were identified as key concepts to managing this dissonance in both this study and previous literature (Luijks et al., 2012). This will be discussed in detail in answer to the next research question (8.2.4).

Multimorbidity creates further complexity for clinicians as it was reported that symptoms of musculoskeletal pain may be indicative of other health conditions, and it is often the GP's responsibility to untangle this. This was also discussed in focus groups with GPs in the Netherlands; interactions between symptoms often means having to attempt multiple different treatment strategies to establish the true cause, which in turn creates multiple consultations and a long waiting time until resolution (Luijks et al., 2012). In turn, this can cause frustration for both clinicians and older adults, affecting the doctor-patient relationship.

This discussion regarding multimorbidity may highlight a barrier to the use of stratified care for older adults. Stratified care is most effective when the consultation is solely focused on the musculoskeletal condition. However, as discussed, this is rarely the case for older adults, and it can take multiple consultations to identify the true underlying causation of pain. This is especially a concern for the oldest-old adults and may be reflected in the STarT MSK main trial. Out of 1203 participants, only 26 were

aged 85 or over, of which only five were in the intervention arm. This is less than two percent of the total intervention participants; disproportionately lower than consultations by this population in practice. Therefore, multimorbidity in older adults and the complexity it creates may result in GPs being reluctant to use stratified care in this population.

8.2.3.2 Treatment

Decisions regarding treatment were also a source of complexity and dissonance in the consultation. A salient concern for both GPs and older adults was the prescription of painkillers, particularly opioids. GPs in this study were concerned due to worries around interactions with other medications, potential side-effects, and older adults forming a reliance on opioids. This reluctance to prescribe is consistent with previous research; GPs in focus groups have expressed a fear of causing harm to older adults with chronic pain by prescribing opioids (Spitz et al., 2011). There were several reasons for this: not knowing how older adults, particularly those aged over 80 will respond to opioids, uncertainty about dosage, and feeling guilty if any opioid-related adverse events occurred (for example, falls).

In this study, some GPs perceived that older adults with musculoskeletal pain consulted with the expectation that painkillers would be prescribed, and that it was a challenge to attempt reducing these medications or suggest alternative management strategies. This contrasts with previous research, in which the majority of GPs acknowledged that older adults were often reluctant to take painkillers due to worries about side effects, addiction and the stigma around taking 'drugs' (Spitz et al., 2011). However, the views of GPs from the previous research align with the views of older adult participants in this study, who reported their own concerns about taking painkillers. The majority of older adults in this study reported that they did not wish to be given painkillers, particularly strong painkillers, as a treatment option, and if the GP

did offer painkillers with no other treatment options this was seen as dismissive. Furthermore, when painkillers were prescribed, nearly all older adult participants reported lowering the medication dose or frequency at home, without consulting the GP. One reason for this was that taking lots of medications and painkillers was associated with the label of 'old age'. This label of being 'old' was often perceived negatively, with links to frailty, restriction and isolation. Therefore, reducing the frequency of taking medication was one way in which participants detached themselves from this label. Further reasons for reducing painkiller use were the normalisation of pain in later life, and the comparison of their pain to others' pain. Specifically, the concept that musculoskeletal pain was 'normal' and 'natural' in older age reinforced the perception that this was their new normal, and that they should be able to cope without painkillers. Furthermore, participants minimised their pain in comparison to other peoples' pain, justifying their reduction in painkillers as their own pain severity was lower. Previous research has also found that older adults often reduce their pain medication for musculoskeletal pain, for similar reasons. When interviewed, older adults with arthritis reported that they often took a lower dose than prescribed due to acceptance of arthritis pain, social comparison, having a high pain tolerance and having modified daily activities so that painkillers were not needed (Sale, Gignac & Hawker, 2006). These views were individualistic; older adults encouraged other people experiencing the same type of pain to adhere to prescriptions, further minimising the impact of their own pain compared to others. Furthermore, participants viewed painkillers as a 'different type' of medication than tablets they are on for other health conditions, possibly due to the instructions on the packet to 'take as needed', potentially giving older adults control and autonomy over painkillers that they are not able to have with other medication. Moreover, a meta-synthesis of qualitative studies exploring older adults' strategies to cope with chronic pain identified a theme of 'doing it my way without medication' (Crowe, Gillon, Jordan & McCall, 2017). As above, across the 13 studies that contributed to this meta-theme, older adults reported that

they were often disappointed in the efficacy of painkillers to manage pain, worried about side-effects, and had a fear of addiction. Additionally, older adults had an impression that taking painkillers would be forfeiting their independence, preferring to use self-management strategies to retain responsibility, control, and independence. This provides a possible explanation to the discussion above where older adults linked taking lots of medication with 'being old'; reliance of painkillers may symbolise a relinquishment of control over their own health, function and independence. The previous research discussed in this section has only included participants that are either all clinicians or all older adults, and so this is furthered by the presentation of both clinicians' and older adults' views together in the same analysis in this study. Combining these views has identified that older adults and clinicians have very similar viewpoints on the use of painkillers to manage musculoskeletal pain, yet this is not communicated. Rather, dissonance is created as some GPs expect patients to want painkillers and therefore feel pressured to provide this despite wishing to reduce prescriptions. Conversely, the majority of older adults wish to engage in non-pharmaceutical management strategies but are led by the GP's decision, resulting in alteration of doses and frequency at home.

Despite these reservations voiced by both GPs and older adults, there were a number of reasons that GPs continued to prescribe painkillers to older adults with musculoskeletal pain. Firstly, GPs wished to help older adults as efficaciously and immediately as possible and felt responsible for providing a solution in the consultation, especially given the recurrent nature of primary care as the first port of call. Primary care clinicians in a previous study have also described that their priority for older adults is to improve quality of life, however found this a struggle to translate into medical procedures and consultations (Luijckx et al., 2012). In particular, GPs' decision making regarding treatments were influenced by the patient's age and life expectancy; in cases where prognosis was perceived to be limited, present comfort and alleviation of

symptoms became the priority. Therefore, short-term quality of life took precedent over longer-term quality of life. This may provide some explanation as to why GPs in this study prescribed painkillers to older adults despite their reservations; painkillers provided an immediate solution to improving older adults' quality of life.

Additionally, GPs felt limited by the selection of available and appropriate management options. Linked with the discussion in the previous section regarding older adults not wishing to discuss mental health, GPs also reported believing that older adults preferred taking tablets than engaging in psychological therapy, and therefore did not consider this as a potential treatment option. Furthermore, as older adults had usually experienced their musculoskeletal pain for many years, GPs felt that they could not refer them back to management options that had not seemingly provided any long-term benefit, for example, physiotherapy. In addition to this, surgery is often not considered a safe or appropriate option for musculoskeletal pain, especially in the oldest-old. Therefore, despite wishing to improve older adults' quality of life and recognising the risks of prescribing painkillers, GPs reported feeling helpless in being able to provide any other management options. GPs in every focus group expressed that their ideal options would be lifestyle and social interventions, however felt that they were unable to provide these. The main barriers to social and lifestyle interventions were either that they were simply not available in their area, or that they did not have the time in a consultation to research local interventions (e.g. exercise classes) for individual patients. The importance of knowing about local facilities for lifestyle interventions has been highlighted previously by GPs in relation to stratified care, as it is a specific matched treatment option (Karstens et al., 2015). GPs in Karstens et al.'s study who felt that they did not have enough of an overview of these treatment services were concerned that patients would subsequently lose confidence in them. This matches with findings from this study, despite the previous study recruiting only GPs; being set in Germany; and the discussion being in anticipation of stratified care rather than

experience of using it in practice. Of note, in Karstens et al. publication (2015), GPs were referring to the management of low risk patients of all ages, in comparison to the focus on older adults in this study; signifying that this may be an issue for all patients. From this thesis it is clear that this is a significant barrier to providing appropriate treatment for musculoskeletal pain for older adults. One way to address this barrier may be social prescribing; which is discussed in the implications section (8.3.1).

8.2.4 Research Question 4

What do older adults and clinicians see as constituting a good GP consultation for musculoskeletal pain for older adults, and what are considered acceptable outcomes?

The pivotal factor identified as creating a good consultation by both older adults and clinicians was reassurance. Multiple different types of reassurance were identified in the qualitative data.

Affective and cognitive reassurance are concepts that have previously been identified in the research literature, particularly in relation to primary care consultations for low back pain (Pincus et al., 2013). Affective reassurance refers to the relationship between the clinician and the patient, including showing empathy and use of non-verbal communication such as body language. Cognitive reassurance pertains to explanation of diagnoses and medical terminology by the clinician, as well as making sure the patient understands discussions throughout the consultation (Holt & Pincus, 2016). The findings from this study resonate with these concepts. When asked what makes a good consultation, and the outcome of a good consultation, participants often first discussed the personality and friendliness of the clinician. This involved the clinician having a warm and open demeanour, having a good rapport, making eye contact and listening. In some cases, good affective reassurance was powerful enough

to be an acceptable outcome from the consultation itself; having a clinician listen and show empathy and interest resulted in a reduction in reported pain immediately after the consultation. In terms of cognitive reassurance, explaining the condition in a way that the patient understood along with any treatment decisions increased patients' self-efficacy and likelihood to engage in the treatment. It is important to acknowledge that in the findings of this thesis, affective and cognitive reassurance were integrated to produce positive outcomes; that is that both types were essential to result in a good consultation. Specifically, all participants reported that in their experiences, good affective reassurance from the clinician resulted in older adults being more receptive and engaged with the cognitive reassurance – for instance, understanding their condition, following the clinician's advice and engaging in self-management. This finding reflects the literature that has previously investigated reassurance for low back pain; 'generic' reassurance, formed of statements stating such as 'it is likely to get better' can feel dismissive to patients (Linton, McCracken & Vlaeyen, 2008). The findings from this study show that this is not specific to low back pain and can be applied to pain in other musculoskeletal sites. Furthermore, generic reassurance can be particularly detrimental for older adults, who are likely to have experienced musculoskeletal pain for a number of years and subsequently find this advice unhelpful. The findings presented in this thesis suggest the need for cognitive reassurance instead, which is tailored to the individual patient's need, subsequently affecting older adults' perceptions of being listened to in the consultation, which results in an improvement in reports of overall satisfaction, self-efficacy and distress.

The third type of reassurance identified was 'diagnostic reassurance'; the result of gaining a diagnosis of the cause of the musculoskeletal pain. There were different ways in which this was achieved stratified by risk subgroup. For low risk patients, this tended to be through an examination in the consultation, however for medium and high risk patients this was gained through referrals to imaging. Both clinicians, especially

GPs, and older adults desired a diagnosis as an outcome of the consultation. GPs wished to ascertain reassurance that the pain was only musculoskeletal in nature; whilst older adults were reassured by the perception that once a diagnosis was obtained an effective treatment plan would follow. In some cases, this desire for a diagnosis was so strong that GPs reported sending all older adults for a scan, 'just to make sure'. However, previous literature has shown that imaging for musculoskeletal pain can have a detrimental effect upon a patient's wellbeing. A randomised controlled trial found that even when patients with low back pain have the choice whether to have a scan or not, regardless of the outcome those who did receive imaging were not any less worried or more reassured about the underlying cause of their back pain (Kendrick et al., 2001). This has been further supplemented through a trial comparing patients who had a scan and those who did not have a scan for acute low back pain; improvement was similar for both groups, and knowledge of findings from a scan was associated with lower levels of wellbeing (Modic et al., 2005). In particular, imaging may show 'normal' abnormalities; especially for older adults who are likely to have age-related degeneration as expected, and therefore clinicians have been urged to reduce the number of scans they prescribe for patients with musculoskeletal pain (Wheeler, Karran & Harvie, 2018). The findings from this study contrast this previous literature somewhat, as participants who received a diagnosis from the scan (e.g. slipped disc) described being more reassured, as there was now a perception that this could be treated appropriately and effectively. This is similar to qualitative studies in sciatica. People with sciatica described that the identification of a cause of their pain was legitimising; and provided a beginning to a treatment regimen (Ong, Konstantinou, Corbett & Hay, 2011). Furthermore, results from imaging were empowering to people with sciatica, as once a cause was established, they felt confident in engaging in self-management (Ryan & Roberts, 2018). Furthermore, being able to have a scan often requires long-waiting times and having to prove the need for a scan by 'convincing' clinicians for a referral (Ryan, Pope & Roberts, 2020), thus when scan results show

potentially relevant findings, patients feel validated and relieved. Therefore, it may be that mechanisms of reassurance differ by pain site or condition in addition to age. The majority of research exploring reassurance and musculoskeletal pain has focused on non-specific low back pain; whereas participants included in this study also had multisite, neck, knee and shoulder pain.

Older adults in this study who did not get an explanation for the pain as a result of imaging reported prevalent feelings of worry and hopelessness. This is in line with previous qualitative studies with participants of all ages; no identifiable underlying cause of pain results in worry, uncertainty and a potential lack of motivation to engage in treatment options (Froud et al., 2014). In contrast, clinicians reported feeling reassured when scans results came back with no serious underlying causes. This discrepancy is formed by the differing purposes of pursuing imaging for patients and clinicians. Therefore, whilst a clear scan may be a good result from a consultation for a clinician, this is likely to be a distressing outcome for older adults.

A number of participants in this study had a diagnosis of osteoarthritis. Some of these participants reported that they found the diagnosis of osteoarthritis itself to be reassuring. From their perspectives, osteoarthritis was a known condition, and was perceived to be manageable. GPs echoed this, reporting that if a scan showed osteoarthritis this was positive for a majority of older adults. This ties in with older adults' perceptions of osteoarthritis being normalised as a part of ageing, which is supported by previous literature in this area. Specifically, older adults described arthritis as forming an integral part of their biography, defined by hard work required when they were younger and the natural toll of ageing on their body (Sanders, Donovan & Dieppe, 2002). Importantly, this does not mean that arthritis has no negative impacts; participants in both this study and previous literature have described the restrictions upon daily life and wellbeing imposed by pain, stiffness and loss of

mobility (Froud et al., 2014; Sanders, Donovan & Dieppe, 2002). Rather, the incorporation of arthritis into their biographies may be explained by the expectation of getting arthritis, potentially informed by their peers already having this diagnosis. Indeed, participants in this thesis who described being reassured by the diagnosis of arthritis partly attributed this to their knowledge that family or friends who already had arthritis were able to manage the condition successfully. Therefore, a diagnosis of osteoarthritis was perceived as being a good outcome of a consultation for these participants, as they felt confident in their ability to self-manage the pain and did not feel that they needed further consultations.

8.2.5 Stratified care findings

This study builds upon the previous stratified care literature by including both patients' and clinicians' views; focusing on older adults; and taking a mixed methods approach. All qualitative studies investigating stratified care found that acceptability of integrating stratified care into a consultation requires balance; although the process could introduce conversations that would not have happened otherwise (for example with older adults around mental health), it was essential that the consultation dynamics were not disrupted (Karstens et al., 2015; Saunders et al., 2016; Saunders et al., 2020a). This appears to have been achieved in the STarT MSK trial, as no older adults in this study reported anything out of place in the stratified care consultation compared to their previous experiences of usual care consultations.

As discussed in the literature review there are only three previous qualitative studies that have included both patients and clinicians in the sample, all conducted to inform the development of the stratified care interventions (Saunders et al., 2016; Saunders et al., 2020a; Saunders et al., 2020b). A number of the findings from these studies were particularly relevant to the findings from this study, despite having no specific focus on older adults. In particular, Saunders et al. (2016) found that GPs were concerned about

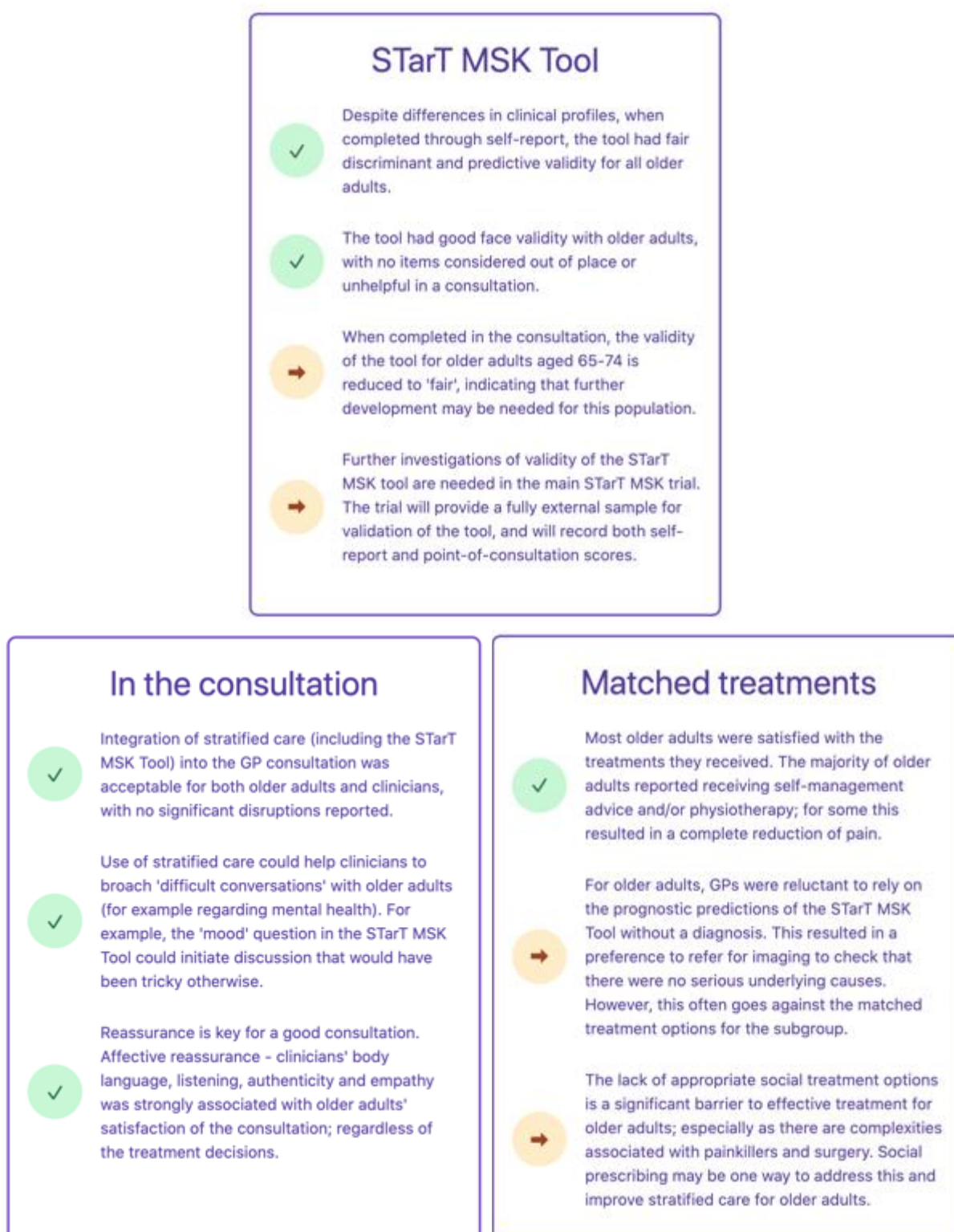
relying on prognosis rather than diagnosis; this was voiced strongly through the clinical reassurance theme in this study. Diagnosis was considered essential for older adults, in order to rule out serious underlying conditions, and therefore GPs were reluctant to use stratified care. Furthermore, in both Karstens et al.'s. (2015) and Saunders et al.'s (2016) studies, GPs also voiced concerns about the matched treatments being in line with locally available services; a factor that was also voiced in this study. Therefore, this is not a finding unique to this thesis; and as such requires considerable attention in future stratified care research. GPs also found that a number of the matched treatment options were not suitable for older adults; for example, surgery is too risky for the oldest-old. As discussed above, there was a lack of social management options, which results in extremely limited options for GPs to consider for older adults.

Importantly, this thesis has shown that including patients in stratified research is imperative, a factor missing from the majority of previous research. Whilst it is clinicians that use the tool, if any aspects of stratified care are not acceptable to patients, then implementation and improvement of outcomes will be difficult.

8.2.6 Summary of findings

The aim of this thesis was to examine the use of stratified care for older adults with musculoskeletal pain, and the findings are summarised in the infographic below (Figure 8.1). Points of success are indicated by the green tick icons, and points for further investigation are indicated by the orange arrow icons.

Figure 8.1 Summary of thesis findings



8.3 Implications for stratified care and clinical practice

These findings have numerous implications for stratified care and subsequently clinical practice. The findings from the first two research questions suggests that the STarT MSK tool used at the point-of-consultation may have reduced predictive validity for older adults. The STarT MSK tool stratifies using pain, physical and psychological factors, and older adults reported better mental health and pain catastrophizing scores when compared to younger adults. Therefore, the prognostic criteria and methods that define younger adults as high risk may not reflect high risk older adults, and may need to be refined to accurately define a high risk older adult. This was supported when the validity of the tool was analysed, as the validity for the tool at point-of-consultation significantly decreased for the 65-74 age category. On the other hand, the tool maintained good validity for participants aged 75 and over, suggesting that there may be further differences between these populations. Therefore, given the variability of the predictive and discriminant validity of the tool by age, this may impact upon the results of the STarT MSK main trial, which uses the tool to stratify patients into low, medium and high risk, and subsequently deliver matched treatments. If the tool is not predictive or discriminant in certain age categories then this will affect whether patients receive the appropriate matched treatments, and therefore impact upon improvement in their musculoskeletal pain.

An important finding is that GPs were reluctant to use stratified care for the oldest-old adults, preferring to rely on diagnostic reassurance gained through imaging than prognosis from stratified care due to concerns about missing any serious malignancies underlying the pain. Indeed, once the main STarT MSK trial had concluded, it was found that only 26 participants out of 1203 were aged 85 or over, with only five were in the intervention arm. Therefore, it is likely that when adopted, stratified care will rarely be used in this population.

There are also a number of implications for the treatments included as part of the stratified care intervention. For all risk subgroups, health care professionals should take into account high proportions of low health literacy in older adults, especially for those aged 85 or over. In clinical practice, communication and affective reassurance is key to engaging with older adults with health literacy needs. Building trust and a relationship between older adults and healthcare workers is integral in supporting their access, understanding and use of health information (Brooks, Ballinger, Nutbeam & Adams, 2017). This is especially important for stratified care, as the main matched treatments for low risk patients are signposting, leaflets and self-management, and it is likely that a large proportion of older adults will have difficulty engaging with these.

Additionally, stratified care for older adults with musculoskeletal pain may need to be tailored to the specific needs of this population. A crucial missing piece identified by both older adults and clinicians is social context. Although a biopsychosocial approach is advocated for in assessment and treatment of musculoskeletal pain, the STarT MSK tool does not currently have any questions regarding social context. Previous research highlighting that social isolation increases the risk of pain-related disability in older adults (Molton & Terrill, 2014), and discussion by clinicians in this study around accounting for an older adults' social situation suggests that this would be an effective addition to the tool.

Furthermore, whilst 'lifestyle intervention' is an option in the matched treatments, this is rarely used and not sufficient. There was only one older adult participant in this study who did receive a recommendation for a lifestyle intervention (Slimming World), for whom the experience was very positive as he was happy to find an effective way to improve his pain without taking extra medication. The main barrier to this option reported by clinicians was having very little time in the consultation and knowledge to support older adults for this option. A solution to this is the integration of social

prescribing into stratified care. Social prescribing is a way for health care professionals to refer patients to local, non-clinical services, such as volunteering, befriending, interest-based community groups (e.g. arts, cooking, gardening), and sports and exercise (The King's Fund, 2017). In England, social prescribing is designed to function through a link worker; a person who takes a holistic approach to individuals' needs, connects people to community groups and services for practical and emotional support, and provides support to existing community groups (NHS England, 2019). Utilising stratified care alongside this service would address this barrier for GPs, and also provide improved communication and care planning between multiple services, including local authorities. Although there is limited research in social prescribing, initial findings are positive. A systematic review of 40 schemes across the UK found that participants reported increases in self-esteem, confidence, mental wellbeing, positive mood, and a reduction in anxiety, depression and negative mood (Chatterjee, Camic, Lockyer & Thomson, 2017). A mixed-methods study investigating social prescribing in England for people with chronic illness and self-reported loneliness found a significant reduction in primary care appointments and an increase in community belonging after social prescription (Kellezi et al., 2019). Social prescribing was also acceptable to both GPs and patients. GPs recognised the limitations of working within a mostly biomedical model; and patients reported that having a link worker who could provide time to listen and tailored support was pivotal to engaging in the community and overcoming anxiety and fear of leaving home. However, there is a paucity of research exploring social prescribing for older adults. A systematic review in 2019 found no studies examining social prescribing for older adults to prevent or delay frailty, despite the policy and clinical focus of this (Smith et al., 2019). However, there have been pilot studies exploring social prescribing in practice. Age UK ran one of these pilot projects; GPs were able to refer older adults who were depressed or feeling low, lonely or socially isolated to Age UK services (Age UK, 2011). Older adults were offered an in-depth assessment of their social, emotional and practical support needs, and were supported

to access useful services or groups, including befriending services, day clubs, benefit checks, trips, legal advice, art groups and advocacy. As a result, older adults reported improvements in their emotional wellbeing, demonstrating the potential efficacy that social prescribing can have for this population. Despite the benefits suggested from previous research and findings from this study, as of yet there has been no research into social prescribing focusing on management of chronic pain for older adults. The need for further research in this area for older adults has been recently highlighted, requiring collaboration between high-quality research, local service providers and authorities, and national policy and investment (Hamilton-West, Milne & Hotham, 2020).

8.4 Future research

Based on the findings from this thesis, a number of recommendations can be made for future research.

Firstly, there is further research to be done regarding the STarT MSK Tool. The current version of the STarT MSK Tool needs adjustment to increase the suitability and validity for older adults. This is crucially important as the recommendations for matched treatments relies on the tool being valid, accurate and reliable. There are several options through which this adjustment could be undertaken. One option could be creating a STarT MSK Tool specific to older adults, going through the same development and validation process as the current STarT MSK Tool, but focusing on factors pertinent only to older adults. However, given that this is a tool designed for use in clinical practice, creating more versions for specific populations may not be pragmatic. Additionally, there is evidence that items of the STarT MSK Tool including duration of pain, pain in multiple sites and length of pain problem are predictive of persistent pain for older adults (Larsson, Hansson, Sundquist & Jakobsson, 2017), and as such there would likely be duplication of items across both tools. Therefore, a more

suitable option is to add some extra items to the tool, only to be used for older adults. As the STarT MSK tool is designed to be built into a GP's software, the extra questions could be triggered upon patient age in the patient record, therefore maintaining GPs' acceptability of using the STarT MSK Tool in the consultation. Future research should investigate whether additional items would increase the validity of the tool for older adults. Specifically, it is critically important to address the lack of social factors in the tool. Social factors are crucial to consider for older adults, for example:

- Loneliness has been identified as a predictor of chronic low back pain in older adults seven years later (Jacobs, Hammerman-Rozenberg, Cohen & Stressman, 2006; Smith, 2017).
- Social support is a protective factor against chronic pain; greater levels of social support are associated with engagement in adaptive coping strategies and lower levels of depressive symptoms in older adults (Holtzma, Newth & Delongis, 2004; Hung et al., 2017).

Indeed, the importance of including social factors in prognostic tools for older adults is highlighted in the tools developed for assessing frailty. There are multiple risk assessment prognostic tools for frailty for older adults that have high predictive validity (Tilberg Frailty Scale, PRISMA-7). Frailty and musculoskeletal pain are similar in that they are both multidimensional conditions – not simply biological diseases. Therefore, it is important that all factors are recognised and included.

Furthermore, the quantitative findings suggest that further research should investigate the validity of the STarT MSK tool by age for other outcomes besides pain intensity; for example, secondary outcome measures of the STarT MSK trial such as physical function, quality of life and self-efficacy (Campbell et al., 2016). Whilst the tool has variable validity for pain intensity, it may be that validity is improved for other outcomes. Indeed, physical function is often used as an outcome measure for musculoskeletal pain, with many interventions targeting this, and may be a more

appropriate and useful outcome to predict (Bergman, 2007). This would also add to the ability to compare the tool with STarT Back which is widely used in clinical practice using physical function as measured through the Roland Morris Disability Questionnaire as the primary outcome (Hill et al., 2011).

Additionally, whilst quantitative analysis focused upon the differences in the clinical profiles for older adults, the 25-34 age category reported notable differences, especially in the psychological domain, with the highest scores for mental health, and catastrophizing. Research to further investigate these differences, and the antecedents of these factors would be of use in order to understand the musculoskeletal pain experience for younger adults and identify which management options may be most suitable.

Replication of the quantitative analyses from the STarT MSK main trial dataset would be beneficial; firstly, this would increase the validity of the study as the tool would be tested in a larger external sample than the pilot study. Secondly, this would allow the quantitative and qualitative data to be connected – participants from the same sample will have been included in both phases of research, and therefore new links could potentially be drawn between findings (Fetters, Curry & Creswell, 2013).

One of the main limitations of the qualitative research was that no participants aged 85 or over could be recruited, despite there being differences to explore from the quantitative findings and this age group being a large proportion of consulters in primary care. Therefore, future research should look to interview the oldest-old patients consulting primary care services for musculoskeletal pain. However, as discussed above, recruiting older adults to applied research can be challenging (Weil, Mendoza & McGavin, 2017), therefore a targeted approach would be the most beneficial, possibly through collaboration with GPs and other healthcare professionals.

Reassurance was a strong theme presented in this study, and particularly important in mediating negotiation between patients and GPs. Future research should therefore aim to investigate how healthcare professionals, particularly GPs as they are the main port of call for musculoskeletal pain, can give more effective reassurance. Future research could investigate this in stages. For example;

- Stage 1: A qualitative, conversation and observational analysis of reassurance, relationships and communication between GPs and patients. This would involve observing GP consultations and analysing the data in terms of the types of reassurance (affective, cognitive, clinical) given in the consultation. Interviews with both the patients and the GPs after would build upon these observations, giving both the chance to reflect upon the dynamics of the consultation.
- Stage 2: Development of an online module to enhance GPs' skills at giving effective reassurance to patients with musculoskeletal pain. This would require utilising psychological theory, PPIE, and the data gained from Stage 1 to develop the content of the module.
- Stage 3: Testing the module in a study investigating whether GPs' abilities to give effective reassurance improve after completing the module. This would be investigated through questionnaires completed by GPs and patients both before and after completing the module in order to assess any differences.

There is also future research required in relation to stratified care. Once analysis of the main STarT MSK trial is complete, secondary analysis should be undertaken for the older adult subgroup to determine whether stratified care was clinically effective for this population, as this is currently unknown. In addition, this would also reveal whether the trial was successful in changing GPs' behaviour in the treatments they offer to older

adults; as the qualitative findings indicated the GPs' preferences were often outside of the matched treatment options.

There are recommendations to be made to improve stratified care for older adults. It would be beneficial for GPs to have older adults complete the STarT MSK Tool on paper, either instead of or in addition to being asked in the consultation, as they may be willing to disclose more information via paper than when asked. Furthermore, research needs to be undertaken with GPs to investigate the balance of prognosis and diagnosis needed for GPs to feel comfortable with using stratified care for older adults, especially older adults with multiple conditions and vulnerabilities. Additionally, GPs in particular found some of the matched treatments given in stratified care difficult to use for older adults. The reasons for this ranged from the treatments being inappropriate for the older age categories (e.g. surgery) to older adults' access to services being limited (e.g. travelling for injections). Therefore, an important next step would be to refine the matched treatments offered in a stratified care approach for older adults. This could be done through a literature review of research investigating effective treatments for older adults with musculoskeletal pain, and consensus with a range of professionals relevant in the field, for example GPs, psychologists, physiotherapists, gerontologists. This approach was already taken when developing the current matched treatments in the STarT MSK main trial (Protheroe et al., 2019), but did not take into account the specific needs of older adult patients. Therefore, this could be replicated with a focus on older adults. This would target a number of factors:

- whether the current treatments offered could be refined and improved to improve their efficacy (including reviews of the literature from other fields for effective interventions that can be brought into the MSK field);
- behaviour change theory in older adults;

- improving care planning and integrated pathways; social prescribing and the medical/social divide currently present in primary care (for example the current lack of social prescribing and community activities).

These recommendations should then be brought together and tested in primary care in a similar way to which stratified care has been tested in the current STarT MSK programme.

8.5 Strengths and limitations

8.5.1 Strengths

8.5.1.1 Mixed methods and pragmatism

Taking a pragmatic approach to this study allowed each element of stratified care (the STarT MSK Tool, the consultation, and the management options) to be explored through the most appropriate method. Therefore, this study was able to explore and discuss stratified care holistically, whilst previous literature has only focused on one component. Furthermore, as pragmatism “*accepts that there are singular and multiple realities open to enquiry through research*” (Feilzer, 2010), this supports the use of both quantitative and qualitative methods within this study. Pain is a multidimensional concept, requiring research to be undertaken at both an individual level (e.g. interviews) and population level (e.g. epidemiology). By using both methods, a thorough investigation and analysis was undertaken to address the aim, and subsequently produce a comprehensive well-rounded answer. The scope of the study would have been limited if only quantitative or qualitative methods were used.

A second strength of this study is that Patient Public Involvement and Engagement (PPIE) and clinician input was included in relation to both the quantitative and qualitative phases of the study. Including patients and members of the public was especially important as stratified care relies on patient-reported outcome measures to

assess its effectiveness; therefore, ensuring that the research undertaken was appropriate, acceptable and understandable was essential (Haywood et al., 2015). Due to the mixed methods approach, feedback given in the quantitative phase was also taken forward and included in the design of the qualitative phase – for example, informing the definition of ‘older adult’. Additionally, members of the PPIE group gave their feedback on the findings from both phases of the study, increasing the face validity. This was critical in the qualitative phase; PPIE members aided interpretation by commenting and coding extracts of the datasets, and discussing the development of the themes.

8.5.1.2 Quantitative

A primary strength of the quantitative phase was its novelty, as discussed above (see Section 8.3). The datasets used included participants with a wide age range, which enabled differences by ages across the lifespan to be identified. In particular, using age categories allowed direct comparisons between age cohorts, enabling differences to be investigated closely, compared to previous research which has either focused on older adults only (with varying definitions of ‘older adults’; Thomas et al., 2004), or separated participants into wide age ranges of ‘young adults’, ‘middle-aged’ and ‘older adults’ (Rustøen et al., 2005). This also enables the changes over a lifecourse to be examined; although the data was cross-sectional, the differences between age categories can be observed. Additionally, including risk subgroups in addition to age in the analysis gave an overview of the clinical profiles of patients in stratified care, and whether observed age differences were risk specific, or apparent for all risks.

Both the KAPS and STarT MSK datasets collected data on a wide range of variables. This allowed this analysis to take a holistic view of musculoskeletal pain, investigating differences between various domains that inform the pain experience, rather than focusing on a small number of specific factors. This reflects the entire lived experience

of pain, rather than a narrow view, and show the psychosocial factors that change over the lifespan.

A further strength was the incorporation of this analysis within the STarT MSK programme, as this allowed the tool to be developed and analysed iteratively and provided the availability of a number of other items to be investigated. Being nested within this trial meant analysis could be conducted in both self-report and point-of-consultation datasets; strengthening the usefulness of the analysis as it reflected real-life use of the STarT MSK tool.

8.5.1.3 Qualitative

The qualitative phase had a wide range of variation in the sample, gained through purposeful sampling. Participants were invited to take part based on a number of individual factors identified from the baseline questionnaire, including age, risk subgroup, pain site and psychological scores. Purposeful sampling increases the validity of qualitative research by ensuring that there is variation across the sample, and that the findings can be applied more widely (Palinkas et al., 2013); and was the case in this study. Participants of every risk and age category in the intervention arm of the trial experienced a GP consultation utilising stratified care, and so therefore it was important to gain the views and experiences across this population. Indeed, this study recruited participants who had been stratified into all three risk subgroups; had a variation of the five pain sites; and a range of levels of psychological distress.

A second strength of this research was the use of clinician focus groups alongside patient interviews. Recruiting clinicians, especially GPs, to qualitative research tends to be challenging due to pragmatic reasons – mainly lack of time (Patel, Cain, Neailey & Hooberman, 2017) – and therefore by nesting these focus groups in the feedback sessions of the trial, clinicians were able to take part. This was essential to forming the

qualitative phase of the study; the majority of research in primary care only interviews either patients or clinicians, presenting one side of the consultation, which is a shared experience. However, this study was able to discuss and compare the views and experiences of both older adult patients and clinicians; without which the theme of 'negotiation' would have been limited. Focus groups were also a very useful method to engage with clinicians; discussion between GPs and physiotherapists was valuable, providing insight into different aspects and challenges of stratified care and the management of musculoskeletal pain.

Furthermore, the design of the qualitative research methods accounted for optional telephone interviews to follow up after the initial face-to-face interview had concluded. In conjunction with the iterative topic guide, this allowed for a more in-depth discussion and analysis to occur; patient experiences of the consultation and matched treatments were voiced, and for the majority of participants their treatment pathway was encapsulated in these interviews. This was especially pertinent given the context of the STarT MSK trial which collected patient outcomes over a six month period, the qualitative allowed for exploration of changes over the course of the trial and therefore may be able to inform the trial findings.

8.5.2 Limitations

8.5.2.1 Mixed methods and pragmatism

A sequential mixed methods approach often requires a long time scale in order to thoroughly design, collect data and analyse each phase of the study (Ivankova, Creswell & Stick, 2006). However, due to the timeline and pragmatics of the trial, the qualitative phase of the study could not be fully informed by the quantitative phase, as ethical submissions needed to be submitted in line with those of the trial. This was mitigated somewhat by the iterative nature of the qualitative research, in which further questions and prompts could be added into the topic guides as the data collection was

undertaken. The timescale also limited the recruitment of participants to the qualitative phase of the study, as they had to be recruited at the beginning of the trial rather than throughout. Subsequently, participants were not able to be recruited from all four areas of the trial, potentially limiting the generalisability across geographical areas.

8.5.2.2 Quantitative

In both datasets, there were small numbers of participants in the 18-24 and 85+ age categories, which were then subsequently then divided by risk. This is particularly evident in the TAPS pilot dataset, in which only the data from the intervention arm was used. Therefore, age categories needed to be collapsed in order to provide power for the analyses. This goes against the findings of chapter four, as the differences that were shown between the oldest-old adults (85+) and other age categories could not be investigated further in relation to the validity of the STarT MSK tool. Although this follows the epidemiology of high risk musculoskeletal pain, in which the high risk group has the smallest proportions (Campbell et al., 2016), findings for these categories may be less representative than other age categories and risk subgroups. A second limitation is that whilst differences in the individual factors associated with pain can be observed, no relationships can be developed to understand how these factors interact with one another as part of the overall pain experience. Additionally, due to the different outcome measures used in KAPS and TAPS for physical function, this analysis only investigated validity for pain intensity; an outcome measure that is difficult to change. Therefore, it is currently unknown how well the STarT MSK tool predicts factors other than pain intensity, especially those pertinent to older adults such as physical function or mood. A third limitation is differences between the datasets. The KAPS dataset was a cohort study, with no interventions being provided to participants, only that which they received through usual primary care. In comparison, half of the participants in the TAPS dataset received a stratified care intervention, which could influence the outcomes. However, a mitigation of this is that the TAPS pilot trial did not

find significant differences between the intervention and control arms. Therefore, whilst cohort data is being compared with intervention data in this thesis, to the best of our knowledge stratified care did not change or influence participant outcomes significantly. For future validation analyses in larger datasets (i.e., the STarT MSK trial), to avoid the possibility of influence by stratified care, the KAPS cohort data could be compared with only the control arm of the trial.

8.5.2.3 Qualitative

As discussed above, it would have been beneficial to recruit more equally from the different geographical areas in order to reflect the balance of participants in the STarT MSK main trial. Similarly, whilst a strength of the quantitative analysis was the ability to compare across age cohorts, this was not as possible in the qualitative as the age range of participants was only between 67 and 84. This was unavoidable due to the small numbers of participants aged over 85 recruited to the intervention arm of the trial, but limits the integration of the quantitative and qualitative data for this age group. Furthermore, although purposeful sampling was used, all older adult participants were White British, and the majority were highly educated, potentially reflecting the geographical areas recruited from, which were mainly of middle-high socio-economic status. Therefore, the sample is not representative of ethnic minorities and patients with lower levels of socio-economic status and health literacy.

A procedural limitation was the length of time between the initial consultation in which stratified care was used and interviewing participants. Whilst clinicians were asked generally about their experiences of consultations utilising stratified care, patients would have only experienced this once. As a result of lengthy trial and consent processes, there was often several weeks or even months between the consultation in which stratified care was used and the older person being interviewed. This meant that

patient recall was sometimes difficult; with some participants unable to recall which consultation they were being asked to reflect on.

There were some limitations regarding the clinician focus groups. Despite being incorporated into the trial feedback sessions, recruiting GPs was sometimes challenging. One of the focus groups involved only two participants (a GP and physiotherapist), however the location of the GP practice was extremely rural, and reflected the availability of clinicians. Additionally, involving more physiotherapists in the focus groups would have been beneficial; only two were recruited compared to 14 GPs. The majority of medium and high risk patients in the main trial were referred to physiotherapy, and therefore being able to gain more physiotherapists' views on stratified care for older adults would have been informative.

8.6 Reflections

My experiences previous to this PhD equipped me with the foundation to take this project and make it my own. I had completed an undergraduate degree in Psychology and a Masters degree in Health Psychology, and had experience working in a Clinical Psychology department and with a Pain Management Department.

My degrees gave me experience in designing, conducting, analysing and writing up both quantitative and qualitative research. However, I ensured that my skills in both quantitative and qualitative research methods were supplemented throughout my PhD through extra training and support. Both my Health Psychology background and clinical experience meant that coming into this PhD I had an awareness of the impact that pain can have on an individual; psychological factors associated with pain; the difficulties in managing pain, especially chronic pain; and communication skills with patients.

Therefore, I felt confident in engaging with a biopsychosocial approach to pain, and also was comfortable with speaking to both clinicians and patients as I undertook my

qualitative data collection. This was especially pertinent in discussions regarding mental health, particularly informing how I framed my questions in order to explore the topic thoroughly whilst also considering the personal nature of these.

As my PhD was nested in the STarT MSK trial – an NIHR funded randomised clinical trial – this provided valuable experience in the design, management and decision-making involved with a trial. It also caused some challenges in the management of the PhD; some decisions were time restricted and had to be within the scope of the trial. However, the nature of the STarT MSK trial development from pilot trial to main trial tied in with the sequential mixed methods design of this study; while the results from the pilot trial were being analysed and amendments to the intervention made ahead of the main trial, this gave time for me to develop and complete the quantitative phase of the study, which then was able to inform the qualitative phase. Immersing myself in the quantitative phase first meant that I understood the measurements and outcomes of the trial very well, and felt comfortable with the associated procedures. Although I had not used some of the quantitative methods I was using to analyse the data, with support from the senior statistician on the trial I had time to become knowledgeable regarding these and carrying out the data analysis myself.

Whilst I was relatively confident in conducting the qualitative research, there were challenges to this. For the focus groups with GPs, I was aware of my Psychology background compared to their clinical background, sometimes feeling as though they were the experts on the subject matter; especially with GPs who preferred to work from a biomedical perspective. However, including physiotherapists in two of the focus groups provided contrast to the GPs' perspectives and a more holistic picture of the management strategies; and were more open and experienced in adopting a biopsychosocial view of pain.

Having the focus groups as part of the STarT MSK trial clinician feedback workshops was beneficial, as I anticipate that recruitment would have been very challenging otherwise. However, this also meant that the focus groups were time limited, and often I felt a pressure to cover all aspects of the topic guide, and was unable to pursue conversations as much as I would have ideally want to. Furthermore, in one of the focus groups I was aware of a hierarchy and power differential between the members of the focus groups, particularly between the GP partners and trainees – the GP partners were very dominant in their conversations and opinions, and the less experienced GPs tended to be submissive and align their opinions with those of the others. I tried to address this by directing questions at the quieter participants, although the power differential was still present.

I was aware of the importance of building a rapport with the older adults I interviewed, and tried to do this in multiple ways. I made sure to speak to them on the phone and arrange an interview time and date that suited them, and also rang the day before to double check that they still wished to take part; this then helped to break the ice when I first met them face-to-face. Despite having purposefully sampled the participants based on their answers to the baseline questionnaire, I did not refer to this during the interview – I wanted the interview to be open and led by the participant as much as possible, and to only discuss things that they were happy to disclose to me in person. I was also aware of a potential power difference between myself and the participants; I tried to make myself as approachable as I could, and the interview as person-centred as possible, wanting to distance myself from the perception of a ‘researcher from the university’. At some points in interviews, I did feel that participants wanted to please me and answer ‘correctly’, despite my assurances that I was interested in their own experience and there were no wrong answers. This was especially prevalent when the participants felt that their pain had reduced significantly – some participants were under the impression that I would only want to interview people still experiencing pain,

with more than one saying that they 'didn't want to waste my time'. I was also concerned that the age difference would have an effect on the interview, and whilst some participants commented that I 'could be their granddaughter', this was said in jest and was more of a bonding moment rather than a barrier; potentially making them feel more comfortable in talking to me. A couple of the interviews I found more emotionally challenging – participants who were especially appreciative of me having an interest in them; who had experienced distress; or who lived alone. In some instances, a strong rapport was built, and it was difficult to end the relationship as the participant wished to stay in contact. Having follow up telephone interviews helped to manage this, and end the researcher-participant relationship as I was able to refer to only having ethics for two interviews.

Internal and external dissemination of my PhD has been extremely beneficial to both my personal and PhD development. Being part of a stratified care research group meant that I was able to discuss my PhD plans with a wide group of other experienced researchers from different disciplines and clinicians. Presenting my plans and findings at conferences, increased my confidence in presenting – in my final year I was able to discuss and disseminate my PhD with leading musculoskeletal pain researchers at the International Forum for Back and Neck Pain Research in Primary Care, in addition to psychologists at the Division of Health Psychology conference. These presentations and discussions inspired and challenged me, giving me confidence in my findings and an awareness of implications I had not considered.

8.7 Thesis conclusion

This thesis, through its mixed methods design, has shown that whilst stratified care for musculoskeletal pain was acceptable to both older adults and clinicians, there are issues that require attention and further research in order for the potential effectiveness of stratified care for older adults to be delivered. Even when focused on the issue of

musculoskeletal pain, GPs consider it of lesser importance than other comorbidities, despite the devastating impact it can have on an older adult's quality of life. These differing priorities and expectations can cause dissonance in the consultation that is difficult to resolve. In light of this, reassurance, both affective and clinical, is a key factor of a good consultation, and must be maintained in consultations that use of stratified care. Critically important is the incorporation of social factors. Currently neither the STarT MSK Tool nor the matched treatment options provide an adequate focus upon an older adult's social situation and the benefit of social management strategies, despite the essentiality of these for older adults with pain. Furthermore, GPs must feel confident in being able to use stratified care for older adults, especially the oldest-old. If these issues are addressed, then stratified care is a promising way to provide older adults with musculoskeletal pain with appropriate and efficacious treatment in primary care consultations, thereby improving both outcomes and quality of life.

References

- Abedi, M., Manshadi, F. D., Khalkhali, M., Mousavi, S. J., Baghban, A. A., Montazeri, A., & Parnianpour, M. (2015). Translation and validation of the Persian version of the STarT Back Screening Tool in patients with nonspecific low back pain. *Manual therapy*, 20(6), 850-854.
- Age UK. (2017). Later Life in the United Kingdom. Retrieved 1 June 2017 from https://www.ageuk.org.uk/Documents/EN-GB/Factsheets/Later_Life_UK_factsheet.pdf?dtrk=true
- Ageing- Office for National Statistics. (2016). Ons.gov.uk. Retrieved 1 June 2017, from <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/agein>
- Alami, S., Boutron, I., Desjeux, D., Hirschhorn, M., Meric, G., Rannou, F., & Poiraudreau, S. (2011). Patients' and practitioners' views of knee osteoarthritis and its management: a qualitative interview study. *PLoS One*, 6(5), e19634.
- Alkan, B. M., Fidan, F., Tosun, A., & Ardiçoğlu, Ö. (2014). Quality of life and self-reported disability in patients with knee osteoarthritis. *Modern rheumatology*, 24(1), 166-171.
- Allcock, N., Elkan, R., & Williams, J. (2007). Patients referred to a pain management clinic: beliefs, expectations and priorities. *Journal of Advanced Nursing*, 60(3), 248-256.
- Arthritis Research UK. (2017). State of Musculoskeletal Health 2017. Retrieved 1 June 2017, from <http://www.arthritisresearchuk.org/arthritis-information/data-and-statistics/state-of-musculoskeletal-health.aspx>
- Artus, M., Campbell, P., Mallen, C. D., Dunn, K. M., & van der Windt, D. A. (2017). Generic prognostic factors for musculoskeletal pain in primary care: a systematic review. *BMJ open*, 7(1).
- Artus, M., Croft, P., & Lewis, M. (2007). The use of CAM and conventional treatments among primary care consultants with chronic musculoskeletal pain. *BMC family practice*, 8(1), 26.
- Azimi, P., Shahzadi, S., Azhari, S., & Montazeri, A. (2014). A validation study of the Iranian version of STarT Back Screening Tool (SBST) in lumbar central canal stenosis patients. *Journal of Orthopaedic Science*, 19(2), 213-217.
- Babatunde, O. O., Jordan, J. L., Van der Windt, D. A., Hill, J. C., Foster, N. E., & Protheroe, J. (2017). Effective treatment options for musculoskeletal pain in primary care: a systematic overview of current evidence. *PloS one*, 12(6), e0178621.
- Bailey, J. (2008). First steps in qualitative data analysis: transcribing. *Family practice*, 25(2), 127-131.
- Baker, S., McBeth, J., Chew-Graham, C. A., & Wilkie, R. (2017). Musculoskeletal pain and co-morbid insomnia in adults; a population study of the prevalence and impact on restricted social participation. *BMC family practice*, 18(1), 17.

- Barry, L. C., Gill, T. M., Kerns, R. D., & Reid, M. C. (2005). Identification of pain-reduction strategies used by community-dwelling older persons. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, 60(12), 1569-1575.
- Bastiaens, H., Van Royen, P., Pavlic, D. R., Raposo, V., & Baker, R. (2007). Older people's preferences for involvement in their own care: a qualitative study in primary health care in 11 European countries. *Patient education and counseling*, 68(1), 33-42.
- Beissner, K., Henderson Jr, C. R., Papaleontiou, M., Olkhovskaya, Y., Wigglesworth, J., & Reid, M. C. (2009). Physical therapists' use of cognitive-behavioral therapy for older adults with chronic pain: a nationwide survey. *Physical Therapy*, 89(5), 456-469.
- Belo, J. N., Berger, M. Y., Koes, B. W., & Bierma-Zeinstra, S. M. A. (2009). Prognostic factors in adults with knee pain in general practice. *Arthritis Care & Research*, 61(2), 143-151.
- Belsey, J. (2002). Primary care workload in the management of chronic pain. A retrospective cohort study using a GP database to identify resource implications for UK primary care. *Journal of Medical Economics*, 5(1-4), 39-50.
- Beneciuk, J. M., & George, S. Z. (2015). Pragmatic implementation of a stratified primary care model for low back pain management in outpatient physical therapy settings: two-phase, sequential preliminary study. *Physical therapy*, 95(8), 1120-1134.
- Berg, K. O., Maki, B. E., Williams, J. I., Holliday, P. J., & Wood-Dauphinee, S. L. (1992). Clinical and laboratory measures of postural balance in an elderly population. *Archives of physical medicine and rehabilitation*, 73(11), 1073-1080.
- Bergman, A. A., Matthias, M. S., Coffing, J. M., & Krebs, E. E. (2013). Contrasting tensions between patients and PCPs in chronic pain management: a qualitative study. *Pain Medicine*, 14(11), 1689-1697.
- Bernfort, L., Gerdle, B., Rahmqvist, M., Husberg, M., & Levin, L. Å. (2015). Severity of chronic pain in an elderly population in Sweden—impact on costs and quality of life. *Pain*, 156(3), 521-527.
- Berry, J. (2016, October 19). *NHS England » does health literacy matter?* NHS England. Retrieved September 9, 2020, from <https://www.england.nhs.uk/blog/jonathan-berry/>
- Binder, E. F., Schechtman, K. B., Ehsani, A. A., Steger-May, K., Brown, M., Sinacore, D. R., ... & Holloszy, J. O. (2002). Effects of exercise training on frailty in community-dwelling older adults: results of a randomized, controlled trial. *Journal of the American Geriatrics Society*, 50(12), 1921-1928.
- Boeije, H. (2002). A purposeful approach to the constant comparative method in the analysis of qualitative interviews. *Quality and quantity*, 36(4), 391-409.
- Bokhof, B., & Junius-Walker, U. (2016). Reducing polypharmacy from the perspectives of general practitioners and older patients: a synthesis of qualitative studies. *Drugs & aging*, 33(4), 249-266.
- Booker, S., Herr, K., & Tripp-Reimer, T. (2019). Patterns and Perceptions of Self-Management for Osteoarthritis Pain in African American Older Adults. *Pain Medicine*, 20(8), 1489-1499.

- Bostock, S., & Steptoe, A. (2012). Association between low functional health literacy and mortality in older adults: longitudinal cohort study. *Bmj*, 344, e1602.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), 77-101.
- Braun, V., & Clarke, V. (2014). What can “thematic analysis” offer health and wellbeing researchers?. *International journal of qualitative studies on health and well-being*, 9.
- Brett, J. O., Staniszewska, S., Mockford, C., Herron-Marx, S., Hughes, J., Tysall, C., & Suleman, R. (2014). A systematic review of the impact of patient and public involvement on service users, researchers and communities. *The Patient-Patient-Centered Outcomes Research*, 7(4), 387-395.
- Briggs, A. M., Cross, M. J., Hoy, D. G., Sanchez-Riera, L., Blyth, F. M., Woolf, A. D., & March, L. (2016). Musculoskeletal health conditions represent a global threat to healthy aging: a report for the 2015 World Health Organization world report on ageing and health. *The Gerontologist*, 56(suppl_2), S243-S255.
- Brinkmann, S., & Kvale, S. (2005). Confronting the ethics of qualitative research. *Journal of constructivist psychology*, 18(2), 157-181.
- Brooks, C., Ballinger, C., Nutbeam, D., & Adams, J. (2017). The importance of building trust and tailoring interactions when meeting older adults’ health literacy needs. *Disability and rehabilitation*, 39(23), 2428-2435.
- Burrell, G., & Morgan, G. (1979). *Sociological paradigms and organisational analysis: Elements of the sociology of corporate life*. Routledge.
- Caeiro, C., Canhão, H., Paiva, S., Gomes, L. A., Fernandes, R., Rodrigues, A. M., ... & Vicente, L. (2019). Interdisciplinary stratified care for low back pain: A qualitative study on the acceptability, potential facilitators and barriers to implementation. *Plos one*, 14(11), e0225336.
- Campbell, P. G., MacAuley, D., McCrum, E., & Evans, A. (2001). Age differences in the motivating factors for exercise. *Journal of Sport and Exercise Psychology*, 23(3), 191-199.
- Campbell, P., Hill, J. C., Protheroe, J., Afolabi, E. K., Lewis, M., Beardmore, R., ... & van der Windt, D. A. (2016). Keele Aches and Pains Study protocol: validity, acceptability, and feasibility of the Keele STarT MSK tool for subgrouping musculoskeletal patients in primary care. *Journal of Pain Research*, 9, 807.
- Catananti, C., & Gambassi, G. (2010). Pain assessment in the elderly. *Surgical oncology*, 19(3), 140-148.
- Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis*. sage.
- Cheng, H. G., & Phillips, M. R. (2014). Secondary analysis of existing data: opportunities and implementation. *Shanghai archives of psychiatry*, 26(6), 371.
- Cheraghi-Sohi, S., Bower, P., Kennedy, A., Morden, A., Rogers, A., Richardson, J., ... & Ong, B. N. (2013). Patient priorities in osteoarthritis and comorbid conditions: a secondary analysis of qualitative data. *Arthritis Care & Research*, 65(6), 920-927.

Cherkin, D., Balderson, B., Wellman, R., Hsu, C., Sherman, K. J., Evers, S. C., ... & Rock, P. (2018). Effect of low back pain risk-stratification strategy on patient outcomes and care processes: the match randomized trial in primary care. *Journal of general internal medicine*, 33(8), 1324-1336.

Chesser, A. K., Keene Woods, N., Smothers, K., & Rogers, N. (2016). Health literacy and older adults: a systematic review. *Gerontology and geriatric medicine*, 2, 2333721416630492.

Chew-Graham, C., Kovandžić, M., Gask, L., Burroughs, H., Clarke, P., Sanderson, H., & Dowrick, C. (2012). Why may older people with depression not present to primary care? Messages from secondary analysis of qualitative data. *Health & Social Care in the Community*, 20(1), 52-60.

Choi, H., Irwin, M. R., & Cho, H. J. (2015). Impact of social isolation on behavioral health in elderly: Systematic review. *World journal of psychiatry*, 5(4), 432.

Cimas, M., Ayala, A., Sanz, B., Agulló-Tomás, M. S., Escobar, A., & Forjaz, M. J. (2018). Chronic musculoskeletal pain in European older adults: Cross-national and gender differences. *European Journal of Pain*, 22(2), 333-345.

Clarke, A., Anthony, G., Gray, D., Jones, D., McNamee, P., Schofield, P., ... & Martin, D. (2012). "I feel so stupid because I can't give a proper answer..." How older adults describe chronic pain: a qualitative study. *BMC geriatrics*, 12(1), 1-8.

Clarke, A., Martin, D., Jones, D., Schofield, P., Anthony, G., McNamee, P., ... & Smith, B. H. (2014). "I try and smile, I try and be cheery, I try not to be pushy. I try to say 'I'm here for help' but I leave feeling... worried": a qualitative study of perceptions of interactions with health professionals by community-based older adults with chronic pain. *PLoS One*, 9(9), e105450.

Clarson, L. E., Nicholl, B. I., Bishop, A., Daniel, R., & Mallen, C. D. (2016). Discussing prognosis with patients with osteoarthritis: a cross-sectional survey in general practice. *Clinical rheumatology*, 35(4), 1011-1017.

Collins, J. A., & Fauser, B. C. (2005). Balancing the strengths of systematic and narrative reviews.

Collins, K. M., Onwuegbuzie, A. J., & Sutton, I. L. (2006). A model incorporating the rationale and purpose for conducting mixed methods research in special education and beyond. *Learning disabilities: a contemporary journal*, 4(1), 67-100.

Collis, D., & Waterfield, J. (2015). The understanding of pain by older adults who consider themselves to have aged successfully. *Musculoskeletal Care*, 13(1), 19-30.

Cook, A. J., Brawer, P. A., & Vowles, K. E. (2006). The fear-avoidance model of chronic pain: validation and age analysis using structural equation modeling. *Pain*, 121(3), 195-206.

Cormier, S., Lavigne, G. L., Choinière, M., & Rainville, P. (2016). Expectations predict chronic pain treatment outcomes. *Pain*, 157(2), 329-338.

- Cornally, N., & McCarthy, G. (2011). Chronic pain: the help-seeking behavior, attitudes, and beliefs of older adults living in the community. *Pain Management Nursing*, 12(4), 206-217.
- Cornish, F., & Gillespie, A. (2009). A pragmatist approach to the problem of knowledge in health psychology. *Journal of health psychology*, 14(6), 800-809.
- Covinsky, K. E., Lindquist, K., Dunlop, D. D., & Yelin, E. (2009). Pain, functional limitations, and aging. *Journal of the American Geriatrics Society*, 57(9), 1556-1561.
- Coxon, D., Frisher, M., Jinks, C., Jordan, K., Paskins, Z., & Peat, G. (2015). The relative importance of perceived doctor's attitude on the decision to consult for symptomatic osteoarthritis: a choice-based conjoint analysis study. *Bmj Open*, 5(10).
- Creswell, J. W. (2003). Qualitative, quantitative, and mixed methods approaches.
- Creswell, J. W. (2014). *A concise introduction to mixed methods research*. SAGE publications.
- Creswell, J. W., & Plano Clark, V. L. (2011). Choosing a mixed methods design. *Designing and conducting mixed methods research*, 2, 53-106.
- Creswell, J. W., Fetters, M. D., & Ivankova, N. V. (2004). Designing a mixed methods study in primary care. *The Annals of Family Medicine*, 2(1), 7-12.
- Crowe, M., Gillon, D., Jordan, J., & McCall, C. (2017). Older peoples' strategies for coping with chronic non-malignant pain: a qualitative meta-synthesis. *International journal of nursing studies*, 68, 40-50.
- Cruz-Jentoft, A. J., Baeyens, J. P., Bauer, J. M., Boirie, Y., Cederholm, T., Landi, F., ... & Topinková, E. (2010). Sarcopenia: European consensus on definition and diagnosis Report of the European Working Group on Sarcopenia in Older People. *Age and ageing*, 39(4), 412-423.
- Cuesta-Vargas, A. I., & González-Sánchez, M. (2014). Spanish version of the screening Örebro Musculoskeletal Pain Questionnaire: a cross-cultural adaptation and validation. *Health and quality of life outcomes*, 12(1), 157.
- Dansie, E. J., & Turk, D. C. (2013). Assessment of patients with chronic pain. *British journal of anaesthesia*, 111(1), 19-25.
- Daniels, R., van Rossum, E., Beurskens, A., van den Heuvel, W., & de Witte, L. (2012). The predictive validity of three self-report screening instruments for identifying frail older people in the community. *BMC public health*, 12(1), 1-7.
- Department of Work and Pensions. (2011). Number of Future Centenarians by Age Group. Retrieved from http://www.cpc.ac.uk/resources/downloads/DWP_centenarians_by_age_group.pdf
- Deshpande, N., Metter, E. J., Bandinelli, S., Lauretani, F., Windham, B. G., & Ferrucci, L. (2008). Psychological, physical and sensory correlates of fear of falling and consequent activity restriction in the elderly: The InCHIANTI Study. *American journal of physical medicine & rehabilitation/Association of Academic Physiatrists*, 87(5), 354.

- DiCicco-Bloom, B., & Crabtree, B. F. (2006). The qualitative research interview. *Medical education*, 40(4), 314-321.
- Dijkland, S., Retel Helmrich, I., & Steyerberg, E. (2018). Validation of prognostic models: challenges and opportunities. *Journal of Emergency and Critical Care Medicine*, 2(91), 1-4.
- Dobson, F., Bennell, K. L., French, S. D., Nicolson, P. J., Klaasman, R. N., Holden, M. A., ... & Hinman, R. S. (2016). Barriers and facilitators to exercise participation in people with hip and/or knee osteoarthritis: synthesis of the literature using behavior change theory. *American journal of physical medicine & rehabilitation*, 95(5), 372-389.
- Du, S., Yuan, C., Xiao, X., Chu, J., Qiu, Y., & Qian, H. (2011). Self-management programs for chronic musculoskeletal pain conditions: a systematic review and meta-analysis. *Patient education and counseling*, 85(3), e299-e310.
- Dunn, K. M., Jordan, K., & Croft, P. R. (2006). Characterizing the course of low back pain: a latent class analysis. *American journal of epidemiology*, 163(8), 754-761.
- Edeer, A. O., & Tuna, H. (2012). Management of chronic musculoskeletal pain in the elderly: dilemmas and remedies. In *Pain in Perspective*. IntechOpen.
- Egerton, T., Diamond, L. E., Buchbinder, R., Bennell, K. L., & Slade, S. C. (2017). A systematic review and evidence synthesis of qualitative studies to identify primary care clinicians' barriers and enablers to the management of osteoarthritis. *Osteoarthritis and cartilage*, 25(5), 625-638.
- Eggermont, L. H., Leveille, S. G., Shi, L., Kiely, D. K., Shmerling, R. H., Jones, R. N., ... & Bean, J. F. (2014). Pain characteristics associated with the onset of disability in older adults: the maintenance of balance, independent living, intellect, and zest in the Elderly Boston Study. *Journal of the American Geriatrics Society*, 62(6), 1007-1016.
- Elias, T., & Lowton, K. (2014). Do those over 80 years of age seek more or less medical help? A qualitative study of health and illness beliefs and behaviour of the oldest old. *Sociology of health & illness*, 36(7), 970-985.
- Emerson, K., Boggero, I., Ostir, G., & Jayawardhana, J. (2018). Pain as a risk factor for loneliness among older adults. *Journal of aging and health*, 30(9), 1450-1461.
- Engel, G. L. (1997). From biomedical to biopsychosocial: Being scientific in the human domain. *Psychosomatics*, 38(6), 521-528.
- Ennis, L., & Wykes, T. (2013). Impact of patient involvement in mental health research: longitudinal study. *The British Journal of Psychiatry*, 203(5), 381-386.
- Faircloth, C. A., Boylstein, C., Rittman, M., Young, M. E., & Gubrium, J. (2004). Sudden illness and biographical flow in narratives of stroke recovery. *Sociology of health & illness*, 26(2), 242-261.
- Fegran, L., Johannessen, B., Ludvigsen, M. S., Westergren, T., Høie, M., Slettebø, Å., ... & Haraldstad, K. (2019). The experiences of a nonclinical set of adolescents and young adults living with persistent pain: a qualitative metasynthesis.

Ferreira, V. M., & Sherman, A. M. (2007). The relationship of optimism, pain and social support to well-being in older adults with osteoarthritis. *Aging and Mental Health*, 11(1), 89-98.

Fetters, M. D., Curry, L. A., & Creswell, J. W. (2013). Achieving integration in mixed methods designs—principles and practices. *Health services research*, 48(6pt2), 2134-2156.

Foster, N. E., Hill, J. C., O'Sullivan, P., & Hancock, M. (2013). Stratified models of care. *Best practice & research Clinical rheumatology*, 27(5), 649-661.

Foster, N. E., Mullis, R., Hill, J. C., Lewis, M., Whitehurst, D. G., Doyle, C., ... & Wathall, S. (2014). Effect of stratified care for low back pain in family practice (IMPaCT Back): a prospective population-based sequential comparison. *The Annals of Family Medicine*, 12(2), 102-111.

Fram, S. M. (2013). The constant comparative analysis method outside of grounded theory. *Qualitative Report*, 18, 1.

Fried, L. P., Tangen, C. M., Walston, J., Newman, A. B., Hirsch, C., Gottdiener, J., ... & McBurnie, M. A. (2001). Frailty in older adults: evidence for a phenotype. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, 56(3), M146-M157.

Frost, N. (2011). *Qualitative research methods in psychology: Combining core approaches*. McGraw-Hill Education (UK).

Froud, R., Patterson, S., Eldridge, S., Seale, C., Pincus, T., Rajendran, D., ... & Underwood, M. (2014). A systematic review and meta-synthesis of the impact of low back pain on people's lives. *BMC musculoskeletal disorders*, 15(1), 50

Fusch, P. I., & Ness, L. R. (2015). Are we there yet? Data saturation in qualitative research. *The qualitative report*, 20(9), 1408.

Gagliese, L. (2009). Pain and aging: the emergence of a new subfield of pain research. *The Journal of Pain*, 10(4), 343-353.

Gammons, V., & Caswell, G. (2014). Older people and barriers to self-reporting of chronic pain. *British journal of nursing*, 23(5), 274-278.

Gatchel, R. J., Peng, Y. B., Peters, M. L., Fuchs, P. N., & Turk, D. C. (2007). The biopsychosocial approach to chronic pain: scientific advances and future directions. *Psychological bulletin*, 133(4), 581.

Gellad, W. F., Grenard, J. L., & Marcum, Z. A. (2011). A systematic review of barriers to medication adherence in the elderly: looking beyond cost and regimen complexity. *The American journal of geriatric pharmacotherapy*, 9(1), 11-23.

Gignac, M. A., Backman, C. L., Davis, A. M., Lacaille, D., Mattison, C. A., Montie, P., & Badley, E. M. (2008). Understanding social role participation: what matters to people with arthritis?. *The Journal of rheumatology*, 35(8), 1655-1663.

Gignac, M. A., Davis, A. M., Hawker, G., Wright, J. G., Mahomed, N., Fortin, P. R., & Badley, E. M. (2006). "What do you expect? You're just getting older": a comparison of perceived osteoarthritis-related and aging-related health experiences in middle-and

older-age adults. *Arthritis Care & Research: Official Journal of the American College of Rheumatology*, 55(6), 905-912.

Gilgun, J. F. (2005). "Grab" and good science: Writing up the results of qualitative research. *Qualitative health research*, 15(2), 256-262.

Gillsjö, C., Schwartz-Barcott, D., & Bergh, I. (2013). Learning to endure long-term musculoskeletal pain in daily life at home: a qualitative interview study of the older adult's experience. *J Gerontol Geriat Res*, 2(136), 10.

Glaser, B. G. (1965). The constant comparative method of qualitative analysis. *Social problems*, 12(4), 436-445.

Glaser, B. G., Strauss, A. L., & Strutzel, E. (1968). The discovery of grounded theory; strategies for qualitative research. *Nursing research*, 17(4), 364.

Gobbens, R. J., van Assen, M. A., Luijckx, K. G., Wijnen-Sponselee, M. T., & Schols, J. M. (2010). The Tilburg frailty indicator: psychometric properties. *Journal of the American Medical Directors Association*, 11(5), 344-355.

Godwin, M., Ruhland, L., Casson, I., MacDonald, S., Delva, D., Birtwhistle, R., ... & Seguin, R. (2003). Pragmatic controlled clinical trials in primary care: the struggle between external and internal validity. *BMC medical research methodology*, 3(1), 28.

Gooberman-Hill, R., Heathcote, C., Reid, C. M., Horwood, J., Beswick, A. D., Williams, S., & Ridd, M. J. (2011). Professional experience guides opioid prescribing for chronic joint pain in primary care. *Family practice*, 28(1), 102-109.

Gooding, P. A., Hurst, A., Johnson, J., & Tarrier, N. (2012). Psychological resilience in young and older adults. *International journal of geriatric psychiatry*, 27(3), 262-270.

Gough, D., & Richardson, M. (2018). Systematic reviews. *Advanced Research Methods for Applied Psychology*, 75-87.

Green, D. J., Lewis, M., Mansell, G., Artus, M., Dziedzic, K. S., Hay, E. M., ... & Van Der Windt, D. (2018). Clinical course and prognostic factors across different musculoskeletal pain sites: a secondary analysis of individual patient data from randomised clinical trials. *European Journal of Pain*, 22(6), 1057-1070.

Greenhalgh, T., Thorne, S., & Malterud, K. (2018). Time to challenge the spurious hierarchy of systematic over narrative reviews?. *European journal of clinical investigation*, 48(6).

Grime, J., Richardson, J. C., & Ong, B. N. (2010). Perceptions of joint pain and feeling well in older people who reported being healthy: a qualitative study. *Br J Gen Pract*, 60(577), 597-603.

Guillemin, M., & Gillam, L. (2004). Ethics, reflexivity, and "ethically important moments" in research. *Qualitative inquiry*, 10(2), 261-280.

Hadjistavropoulos, T., Herr, K., Turk, D. C., Fine, P. G., Dworkin, R. H., Helme, R., ... & Chibnall, J. T. (2007). An interdisciplinary expert consensus statement on assessment of pain in older persons. *The Clinical journal of pain*, 23, S1-S43.

Hall, A., Copsey, B., Richmond, H., Thompson, J., Ferreira, M., Latimer, J., & Maher, C. G. (2017). Effectiveness of tai chi for chronic musculoskeletal pain conditions: updated systematic review and meta-analysis. *Physical therapy*, 97(2), 227-238.

Hamilton-West, K., Milne, A., & Hotham, S. (2020). New horizons in supporting older people's health and wellbeing: is social prescribing a way forward?. *Age and Ageing*, 49(3), 319-326.

Hanley, J. A., & McNeil, B. J. (1982). The meaning and use of the area under a receiver operating characteristic (ROC) curve. *Radiology*, 143(1), 29-36.

Hansen, H., Pohontsch, N., van den Bussche, H., Scherer, M., & Schäfer, I. (2015). Reasons for disagreement regarding illnesses between older patients with multimorbidity and their GPs—a qualitative study. *BMC family practice*, 16(1), 68.

Happell, B. (2007). Focus groups in nursing research: an appropriate method or the latest fad?. *Nurse researcher*, 14(2).

Hawker, G. A., Gignac, M. A., Badley, E., Davis, A. M., French, M. R., Li, Y., ... & Lou, W. (2011). A longitudinal study to explain the pain-depression link in older adults with osteoarthritis. *Arthritis care & research*, 63(10), 1382-1390.

Haywood, K., Brett, J., Salek, S., Marlett, N., Penman, C., Shklarov, S., ... & Staniszewska, S. (2015). Patient and public engagement in health-related quality of life and patient-reported outcomes research: what is important and why should we care? Findings from the first ISOQOL patient engagement symposium. *Quality of Life Research*, 24(5), 1069-1076.

Heaton, J. (1998). Secondary analysis of qualitative data. *Social research update*, 22(4), 88-93.

Hellström, Y., Persson, G., & Hallberg, I. R. (2004). Quality of life and symptoms among older people living at home. *Journal of advanced nursing*, 48(6), 584-593.

Hemingway, H., Croft, P., Perel, P., Hayden, J. A., Abrams, K., Timmis, A., ... & Roberts, I. (2013). Prognosis research strategy (PROGRESS) 1: a framework for researching clinical outcomes. *Bmj*, 346.

Hendry, M., Williams, N. H., Markland, D., Wilkinson, C., & Maddison, P. (2006). Why should we exercise when our knees hurt? A qualitative study of primary care patients with osteoarthritis of the knee. *Family practice*, 23(5), 558-567.

Hébert, R., Bravo, G., Korner-Bitensky, N., & Voyer, L. (1996). Predictive validity of a postal questionnaire for screening community-dwelling elderly individuals at risk of functional decline. *Age and ageing*, 25(2), 159-167.

Hill, J. C., Dunn, K. M., Lewis, M., Mullis, R., Main, C. J., Foster, N. E., & Hay, E. M. (2008). A primary care back pain screening tool: identifying patient subgroups for initial treatment. *Arthritis Care & Research: Official Journal of the American College of Rheumatology*, 59(5), 632-641.

Hill, J. C., Garvin, S., Chen, Y., Cooper, V., Wathall, S., Saunders, B., ... & Hay, E. (2020a). Stratified primary care versus non-stratified care for musculoskeletal pain: findings from the STarT MSK feasibility and pilot cluster randomized controlled trial. *BMC family practice*, 21(1), 30.

- Hill, J. C., Whitehurst, D. G., Lewis, M., Bryan, S., Dunn, K. M., Foster, N. E., ... & Sowden, G. (2011). Comparison of stratified primary care management for low back pain with current best practice (STarT Back): a randomised controlled trial. *The Lancet*, 378(9802), 1560-1571.
- Hill, J., Garvin, S., Chen, Y., Cooper, V., Wathall, S., Bartlam, B., ... & Birkinshaw, H. (2020b). Computer-Based Stratified Primary Care for Musculoskeletal Consultations Compared With Usual Care: Study Protocol for the STarT MSK Cluster Randomized Controlled Trial. *JMIR Research Protocols*, 9(7), e17939.
- Hofman, C. S., Makai, P., Boter, H., Buurman, B. M., de Craen, A. J., Rikkert, M. G. O., ... & Melis, R. J. (2015). The influence of age on health valuations: the older olds prefer functional independence while the younger olds prefer less morbidity. *Clinical interventions in aging*, 10, 1131.
- Holden, M. A., Nicholls, E. E., Young, J., Hay, E. M., & Foster, N. E. (2012). Role of exercise for knee pain: what do older adults in the community think?. *Arthritis care & research*, 64(10), 1554-1564.
- Holden, M. T., & Lynch, P. (2004). Choosing the appropriate methodology: Understanding research philosophy. *The marketing review*, 4(4), 397-409.
- Holland, J., & Thomson, R. (2010). Revisiting youthful sexuality: Continuities and changes over two decades. *Sexual and Relationship Therapy*, 25(3), 342-350.
- Holt, N., & Pincus, T. (2016). Developing and testing a measure of consultation-based reassurance for people with low back pain in primary care: a cross-sectional study. *BMC musculoskeletal disorders*, 17(1), 277.
- Holtzman, S., Newth, S., & DeLongis, A. (2004). The role of social support in coping with daily pain among patients with rheumatoid arthritis. *Journal of Health Psychology*, 9(5), 677-695.
- House of Lords. (2013). Ready for Ageing? Report. Retrieved 1 June 2017, from <https://www.publications.parliament.uk/pa/ld201213/ldselect/ldpublic/140/140.pdf>
- Humphrey, A., Lee, L., & Green, R. (2011). *Aspirations for later life*. London, UK: Department for Work and Pensions.
- Hung, M., Bounsanga, J., Voss, M. W., Crum, A. B., Chen, W., & Birmingham, W. C. (2017). The relationship between family support; pain and depression in elderly with arthritis. *Psychology, health & medicine*, 22(1), 75-86.
- Hurley, M. V., Walsh, N. E., Mitchell, H. L., Pimm, T. J., Patel, A., Williamson, E., ... & Reeves, B. C. (2007). Clinical effectiveness of a rehabilitation program integrating exercise, self-management, and active coping strategies for chronic knee pain: A cluster randomized trial. *Arthritis care & research*, 57(7), 1211-1219.
- Ivankova, N. V., Creswell, J. W., & Stick, S. L. (2006). Using mixed-methods sequential explanatory design: From theory to practice. *Field methods*, 18(1), 3-20.
- INVOLVE. (2019). *About involve*. Retrieved September 9, 2020, from <https://www.invo.org.uk/about-involve/>

Jacobs, J. M., Hammerman-Rozenberg, R., Cohen, A., & Stessman, J. (2006). Chronic back pain among the elderly: prevalence, associations, and predictors. *Spine*, 31(7), E203-E207.

James, S. L., Abate, D., Abate, K. H., Abay, S. M., Abbafati, C., Abbasi, N., ... & Abdollahpour, I. (2018). Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*, 392(10159), 1789-1858.

Jancey, J. M., Clarke, A., Howat, P., Maycock, B., & Lee, A. H. (2009). Perceptions of physical activity by older adults: A qualitative study. *Health education journal*, 68(3), 196-206.

Jaworski, M., Rzadkiewicz, M., Adamus, M., Chylinska, J., Lazarewicz, M., Haugan, G., ... & Wlodarczyk, D. (2017). Primary care patients' expectations regarding medical appointments and their experiences during a visit: does age matter?. *Patient preference and adherence*, 11, 1221.

Jensen, M. P. (2003). Questionnaire validation: a brief guide for readers of the research literature. *The Clinical journal of pain*, 19(6), 345-352.

Jinks, C., Ong, B. N., & Richardson, J. (2007). A mixed methods study to investigate needs assessment for knee pain and disability: population and individual perspectives. *BMC musculoskeletal disorders*, 8(1), 59.

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational researcher*, 33(7), 14-26.

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational researcher*, 33(7), 14-26.

Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of mixed methods research*, 1(2), 112-133.

Johnston, M. P. (2017). Secondary data analysis: A method of which the time has come. *Qualitative and quantitative methods in libraries*, 3(3), 619-626.

Jones, D. M., Song, X., & Rockwood, K. (2004). Operationalizing a frailty index from a standardized comprehensive geriatric assessment. *Journal of the American Geriatrics Society*, 52(11), 1929-1933.

Jordan, K. P., Kadam, U. T., Hayward, R., Porcheret, M., Young, C., & Croft, P. (2010). Annual consultation prevalence of regional musculoskeletal problems in primary care: an observational study. *BMC musculoskeletal disorders*, 11(1), 144.

Kamsan, S. S., Singh, D. K. A., Tan, M. P., & Kumar, S. (2020). The knowledge and self-management educational needs of older adults with knee osteoarthritis: A qualitative study. *PloS one*, 15(3), e0230318.

Kanavaki, A. M., Rushton, A., Efstathiou, N., Alrushud, A., Klocke, R., Abhishek, A., & Duda, J. L. (2017). Barriers and facilitators of physical activity in knee and hip osteoarthritis: a systematic review of qualitative evidence. *BMJ open*, 7(12).

- Karoly, P., & Ruehlman, L. S. (2006). Psychological “resilience” and its correlates in chronic pain: findings from a national community sample. *Pain*, 123(1-2), 90-97.
- Karp, J. F., Shega, J. W., Morone, N. E., & Weiner, D. K. (2008). Advances in understanding the mechanisms and management of persistent pain in older adults. *British journal of anaesthesia*, 101(1), 111-120.
- Karran, E. L., McAuley, J. H., Traeger, A. C., Hillier, S. L., Grabherr, L., Russek, L. N., & Moseley, G. L. (2017). Can screening instruments accurately determine poor outcome risk in adults with recent onset low back pain? A systematic review and meta-analysis. *BMC medicine*, 15(1), 13.
- Karstens, S., Joos, S., Hill, J. C., Krug, K., Szecsenyi, J., & Steinhäuser, J. (2015). General practitioners views of implementing a stratified treatment approach for low back pain in Germany: a qualitative study. *PLoS One*, 10(8), e0136119.
- Karstens, S., Kuithan, P., Joos, S., Hill, J. C., Wensing, M., Steinhäuser, J., ... & Szecsenyi, J. (2018). Physiotherapists’ views of implementing a stratified treatment approach for patients with low back pain in Germany: a qualitative study. *BMC health services research*, 18(1), 214.
- Keefe, F. J., Porter, L., Somers, T., Shelby, R., & Wren, A. V. (2013). Psychosocial interventions for managing pain in older adults: outcomes and clinical implications. *British journal of anaesthesia*, 111(1), 89-94.
- Kellezi, B., Wakefield, J. R. H., Stevenson, C., McNamara, N., Mair, E., Bowe, M., ... & Halder, M. M. (2019). The social cure of social prescribing: a mixed-methods study on the benefits of social connectedness on quality and effectiveness of care provision. *BMJ open*, 9(11).
- Kendrick, D., Fielding, K., Bentley, E., Kerslake, R., Miller, P., & Pringle, M. (2001). Radiography of the lumbar spine in primary care patients with low back pain: randomised controlled trial. *Bmj*, 322(7283), 400-405.
- Kitzinger, J. (1994). The methodology of focus groups: the importance of interaction between research participants. *Sociology of health & illness*, 16(1), 103-121.
- Kitzinger, J. (1995). Qualitative research: introducing focus groups. *Bmj*, 311(7000), 299-302.
- Kneeland, E. T., Griffin, M. L., Taghian, N., Weiss, R. D., & McHugh, R. K. (2019). Associations between pain catastrophizing and clinical characteristics in adults with substance use disorders and co-occurring chronic pain. *The American journal of drug and alcohol abuse*, 45(5), 488-494.
- Krefting, L. (1991). Rigor in qualitative research: The assessment of trustworthiness. *American journal of occupational therapy*, 45(3), 214-222.
- Krueger, R. A. (2014). *Focus groups: A practical guide for applied research*. Sage publications.
- Lamé, I. E., Peters, M. L., Vlaeyen, J. W., Kleef, M. V., & Patijn, J. (2005). Quality of life in chronic pain is more associated with beliefs about pain, than with pain intensity. *European journal of Pain*, 9(1), 15-24.

Lansbury, G. (2000). Chronic pain management: a qualitative study of elderly people's preferred coping strategies and barriers to management. *Disability and rehabilitation*, 22(1-2), 2-14.

Lautenbacher, S., Peters, J. H., Heesen, M., Scheel, J., & Kunz, M. (2017). Age changes in pain perception: a systematic-review and meta-analysis of age effects on pain and tolerance thresholds. *Neuroscience & Biobehavioral Reviews*, 75, 104-113.

Lee, J. E., Kahana, E., Kahana, B., & Barnes, K. (2015). Positive affect, depressive symptoms, and arthritis pain of elderly people over time. *Healthy aging research*, 4.

Leveille, S. G., Jones, R. N., Kiely, D. K., Hausdorff, J. M., Shmerling, R. H., Guralnik, J. M., ... & Bean, J. F. (2009). Chronic musculoskeletal pain and the occurrence of falls in an older population. *Jama*, 302(20), 2214-2221.

Lin, E. H., Katon, W., Von Korff, M., Tang, L., Williams Jr, J. W., Kroenke, K., ... & Hoving, M. (2003). Effect of improving depression care on pain and functional outcomes among older adults with arthritis: a randomized controlled trial. *Jama*, 290(18), 2428-2429.

Linton, S. J., & Boersma, K. (2003). Early identification of patients at risk of developing a persistent back problem: the predictive validity of the Örebro Musculoskeletal Pain Questionnaire. *The Clinical journal of pain*, 19(2), 80-86.

Linton, S. J., & Halldén, K. (1998). Can we screen for problematic back pain? A screening questionnaire for predicting outcome in acute and subacute back pain. *The Clinical journal of pain*, 14(3), 209-215.

Linton, S. J., McCracken, L. M., & Vlaeyen, J. W. (2008). Reassurance: help or hinder in the treatment of pain. *Pain*, 134(1), 5-8.

Linton, S. J., Nicholas, M., & MacDonald, S. (2011). Development of a short form of the Örebro Musculoskeletal Pain Screening Questionnaire. *Spine*, 36(22), 1891-1895.

Lloyd-Sherlock, P. (2000). Population ageing in developed and developing regions: implications for health policy. *Social science & medicine*, 51(6), 887-895.

Lloyd-Sherlock, P., McKee, M., Ebrahim, S., Gorman, M., Greengross, S., Prince, M., ... & Ferrucci, L. (2012). Population ageing and health. *The Lancet*, 379(9823), 1295-1296.

López-López, A., Montorio, I., Izal, M., & Velasco, L. (2008). The role of psychological variables in explaining depression in older people with chronic pain. *Aging and mental health*, 12(6), 735-745.

Löffler, C., Kaduszkiewicz, H., Stolzenbach, C. O., Streich, W., Fuchs, A., van den Bussche, H., ... & Altiner, A. (2012). Coping with multimorbidity in old age—a qualitative study. *BMC family practice*, 13(1), 45.

Machado, G. P., Gignac, M. A., & Badley, E. M. (2008). Participation restrictions among older adults with osteoarthritis: a mediated model of physical symptoms, activity limitations, and depression. *Arthritis Care & Research: Official Journal of the American College of Rheumatology*, 59(1), 129-135.

- Mackichan, F., Adamson, J., & Gooberman-Hill, R. (2013). 'Living within your limits': activity restriction in older people experiencing chronic pain. *Age and ageing*, 42(6), 702-708.
- Makris, U. E., Abrams, R. C., Gurland, B., & Reid, M. C. (2014). Management of persistent pain in the older patient: a clinical review. *Jama*, 312(8), 825-837.
- Mallen, C. D., & Peat, G. (2009). Discussing prognosis with older people with musculoskeletal pain: a cross-sectional study in general practice. *BMC family practice*, 10(1), 50.
- Mallen, C. D., Peat, G., Thomas, E., Dunn, K. M., & Croft, P. R. (2007). Prognostic factors for musculoskeletal pain in primary care: a systematic review. *British Journal of General Practice*, 57(541), 655-661.
- Mallen, C. D., Peat, G., Thomas, E., Lacey, R., & Croft, P. (2007). Predicting poor functional outcome in community-dwelling older adults with knee pain: prognostic value of generic indicators. *Annals of the rheumatic diseases*, 66(11), 1456-1461.
- Mallen, C. D., Thomas, E., Belcher, J., Rathod, T., Croft, P., & Peat, G. (2013). Point-of-care prognosis for common musculoskeletal pain in older adults. *JAMA internal medicine*, 173(12), 1119-1125.
- Malterud, K. (2001). Qualitative research: standards, challenges, and guidelines. *The lancet*, 358(9280), 483-488.
- Maniadakis, N., & Gray, A. (2000). The economic burden of back pain in the UK. *Pain*, 84(1), 95-103.
- Marcinowicz, L., Pawlikowska, T., & Oleszczyk, M. (2014). What do older people value when they visit their general practitioner? A qualitative study. *European journal of ageing*, 11(4), 361-367.
- Markle-Reid, M., & Browne, G. (2003). Conceptualizations of frailty in relation to older adults. *Journal of advanced nursing*, 44(1), 58-68.
- Markotic, F., Obrdalj, E. C., Zalihic, A., Pehar, R., Hadziosmanovic, Z., Pivic, G., ... & Puljak, L. (2013). Adherence to pharmacological treatment of chronic nonmalignant pain in individuals aged 65 and older. *Pain Medicine*, 14(2), 247-256.
- Mason, M. (2010, August). Sample size and saturation in PhD studies using qualitative interviews. In *Forum qualitative Sozialforschung/Forum: qualitative social research* (Vol. 11, No. 3).
- Matos, M., Bernardes, S. F., & Goubert, L. (2017). Why and when social support predicts older adults' pain-related disability: a longitudinal study. *Pain*, 158(10), 1915-1924.
- McDonald, D. D., Shea, M., Rose, L., & Fedo, J. (2009). The effect of pain question phrasing on older adult pain information. *Journal of Pain and Symptom Management*, 37(6), 1050-1060.
- Melzack, R., & Casey, K. L. (1968). Sensory, motivational, and central control determinants of pain: a new conceptual model. *The skin senses*, 1, 423-43.

Melzack, R., & Wall, P. D. (1965). Pain mechanisms: a new theory. *Science*, 150(3699), 971-979.

Metzelthin, S. F., Daniëls, R., van Rossum, E., de Witte, L., van den Heuvel, W. J., & Kempen, G. I. (2010). The psychometric properties of three self-report screening instruments for identifying frail older people in the community. *BMC public health*, 10(1), 1-8.

Miaskowski, C., Blyth, F., Nicosia, F., Haan, M., Keefe, F., Smith, A., & Ritchie, C. (2019). A Biopsychosocial Model of Chronic Pain for Older Adults. *Pain Medicine*.
Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. sage.

Moayedi, M., & Davis, K. D. (2013). Theories of pain: from specificity to gate control. *Journal of neurophysiology*, 109(1), 5-12.

Modic, M. T., Obuchowski, N. A., Ross, J. S., Brant-Zawadzki, M. N., Grooff, P. N., Mazanec, D. J., & Benzel, E. C. (2005). Acute low back pain and radiculopathy: MR imaging findings and their prognostic role and effect on outcome. *Radiology*, 237(2), 597-604.

Molton, I. R., & Terrill, A. L. (2014). Overview of persistent pain in older adults. *American Psychologist*, 69(2), 197.

Moon, K., & Blackman, D. (2014). A guide to understanding social science research for natural scientists. *Conservation Biology*, 28(5), 1167-1177.

Moore, A. J., Richardson, J. C., Sim, J., Bernard, M., & Jordan, K. P. (2014). Older people's perceptions of remaining physically active and living with chronic pain. *Qualitative Health Research*, 24(6), 761-772.

Morgan, D. L. (2007). Paradigms lost and pragmatism regained: Methodological implications of combining qualitative and quantitative methods. *Journal of mixed methods research*, 1(1), 48-76.

Morone, N. E., Lynch, C. S., Greco, C. M., Tindle, H. A., & Weiner, D. K. (2008). "I felt like a new person." The effects of mindfulness meditation on older adults with chronic pain: qualitative narrative analysis of diary entries. *The Journal of Pain*, 9(9), 841-848.

Morris, R. L., Sanders, C., Kennedy, A. P., & Rogers, A. (2011). Shifting priorities in multimorbidity: a longitudinal qualitative study of patient's prioritization of multiple conditions. *Chronic illness*, 7(2), 147-161.

Morsø, L., Schiøttz-Christensen, B., Søndergaard, J., & Christiansen, D. H. (2019). The effectiveness of stratified care based on the STarT Back Tool for non-specific low back pain in Danish primary care. In *XVIth International Forum on Back and Neck Pain Research in Primary Care*.

Murphy, S. E., Blake, C., Power, C. K., & Fullen, B. M. (2016). Comparison of a stratified group intervention (STarT Back) with usual group care in patients with low back pain: a nonrandomized controlled trial. *Spine*, 41(8), 645-652.

Murray, C. J., Vos, T., Lozano, R., Naghavi, M., Flaxman, A. D., Michaud, C., ... & Aboyans, V. (2012). Disability-adjusted life years (DALYs) for 291 diseases and

injuries in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. *The lancet*, 380(9859), 2197-2223.

Nair, P., Bhanu, C., Frost, R., Buszewicz, M., & Walters, K. R. (2020). A Systematic Review of Older Adults' Attitudes towards Depression and its Treatment. *The Gerontologist*, 60(1), e93-e104.

Nandy, S., Parsons, S., Cryer, C., Underwood, M., Rashbrook, E., Carter, Y., ... & Feder, G. (2004). Development and preliminary examination of the predictive validity of the Falls Risk Assessment Tool (FRAT) for use in primary care. *Journal of public health*, 26(2), 138-143.

Neves, B. B., Sanders, A., & Kokanović, R. (2019). "It's the worst bloody feeling in the world": Experiences of loneliness and social isolation among older people living in care homes. *Journal of Aging Studies*, 49, 74-84.

Ng, T. P., Feng, L., Nyunt, M. S. Z., Larbi, A., & Yap, K. B. (2014). Frailty in older persons: multisystem risk factors and the Frailty Risk Index (FRI). *Journal of the American Medical Directors Association*, 15(9), 635-642.

NHS England. (2014) NHS England 2013/14 CCG programme budgeting benchmarking tool. Retrieved 1 June 2017, from <https://www.england.nhs.uk/resources/resources-for-ccgs/prog-budgeting/>

Live Well, NHS England. (2018). *Are you at risk of falling?* Retrieved 20 February 2021, from <https://www.nhs.uk/live-well/healthy-body/are-you-at-risk-of-falling/>

NHS England. (2020, February 11). *NHS England » older people*. Retrieved September 9, 2020, from <https://www.england.nhs.uk/ourwork/clinical-policy/older-people/>

NICE. (2013). *Falls: Assessment and prevention of falls in older people*. Retrieved 12 February 2021, from <https://www.nice.org.uk/guidance/cg161/evidence/falls-full-guidance-190033741>

NICE. (2016). *Low back pain and sciatica in over 16s: Assessment and management*. Retrieved September 9, 2020, from <https://www.nice.org.uk/guidance/ng59/chapter/recommendations>

NICE. (2017b, July 27). *Low back pain and sciatica in over 16s - Quality statement 1: Risk stratification*. <https://www.nice.org.uk/guidance/qs155/chapter/Quality-statement-1-Risk-stratification>

NICE. (2017a). *Osteoarthritis: care and management | Guidance and guidelines | Nice.org.uk*. Retrieved 1 June 2017, from <https://www.nice.org.uk/guidance/cg177>

Office for National Statistics. (2018, April 25). *Measuring national well-being*. Retrieved September 9, 2020, from <https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/articles/measuringnationalwellbeing/qualityoflifeintheuk2018>

Nicolson, P. J., Bennell, K. L., Dobson, F. L., Van Ginckel, A., Holden, M. A., & Hinman, R. S. (2017). Interventions to increase adherence to therapeutic exercise in older adults with low back pain and/or hip/knee osteoarthritis: a systematic review and meta-analysis. *British journal of sports medicine*, 51(10), 791-799.

Nielsen, M., Keefe, F. J., Bennell, K., & Jull, G. A. (2014). Physical therapist–delivered cognitive-behavioral therapy: a qualitative study of physical therapists' perceptions and experiences. *Physical therapy*, 94(2), 197-209.

O'Connor, M. K., Netting, F. E., & Thomas, M. L. (2008). Grounded theory: Managing the challenge for those facing institutional review board oversight. *Qualitative Inquiry*, 14(1), 28-45.

Office for National Statistics. (2019, November 19). *Living longer: Is age 70 the new age 65?* Retrieved September 9, 2020, from <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/ageing/articles/livinglongerisage70thenewage65/2019-11-19>

Ong, B. N., & Richardson, J. C. (2006). The contribution of qualitative approaches to musculoskeletal research.

Ong, B. N., Konstantinou, K., Corbett, M., & Hay, E. (2011). Patients' own accounts of sciatica: a qualitative study. *Spine*, 36(15), 1251-1256.

Ouchida, K. M., & Lachs, M. S. (2015). Not for doctors only: Ageism in healthcare. *Generations*, 39(3), 46-57.

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and policy in mental health and mental health services research*, 42(5), 533-544.

Park, S. H. (2018). Tools for assessing fall risk in the elderly: a systematic review and meta-analysis. *Aging clinical and experimental research*, 30(1), 1-16.

Parsons, S., Breen, A., Foster, N. E., Letley, L., Pincus, T., Vogel, S., & Underwood, M. (2007). Prevalence and comparative troublesomeness by age of musculoskeletal pain in different body locations. *Family practice*, 24(4), 308-316.

Paskins, Z., Sanders, T., Croft, P. R., & Hassell, A. B. (2015). The identity crisis of osteoarthritis in general practice: a qualitative study using video-stimulated recall. *The Annals of Family Medicine*, 13(6), 537-544.

Patel, K. V., Guralnik, J. M., Dansie, E. J., & Turk, D. C. (2013). Prevalence and impact of pain among older adults in the United States: findings from the 2011 National Health and Aging Trends Study. *Pain®*, 154(12), 2649-2657.

Patel, S., Cain, R., Neailey, K., & Hooberman, L. (2017). Recruiting general practitioners in England to participate in qualitative research: challenges, strategies, and solutions. *SAGE Research Methods Cases Part 2*.

Payne, G., & Payne, J. (2004). *Key concepts in social research*. Sage.

Peat, G., McCarney, R., & Croft, P. (2001). Knee pain and osteoarthritis in older adults: a review of community burden and current use of primary health care. *Annals of the rheumatic diseases*, 60(2), 91-97.

- Peters, L. L., Boter, H., Buskens, E., & Slaets, J. P. (2012). Measurement properties of the Groningen Frailty Indicator in home-dwelling and institutionalized elderly people. *Journal of the American Medical Directors Association*, 13(6), 546-551.
- Pilz, B., Vasconcelos, R. A., Teixeira, P. P., Mello, W., Marcondes, F. B., Hill, J. C., & Grossi, D. B. (2017). Construct and discriminant validity of STarT Back Screening Tool–Brazilian version. *Brazilian Journal of Physical Therapy*, 21(1), 69-73.
- Pincus, T., Holt, N., Vogel, S., Underwood, M., Savage, R., Walsh, D. A., & Taylor, S. J. C. (2013). Cognitive and affective reassurance and patient outcomes in primary care: a systematic review. *Pain@*, 154(11), 2407-2416.
- Pinquart, M., & Sorensen, S. (2001). Influences on loneliness in older adults: A meta-analysis. *Basic and applied social psychology*, 23(4), 245-266.
- Podsiadlo, D., & Richardson, S. (1991). The timed “Up & Go”: a test of basic functional mobility for frail elderly persons. *Journal of the American geriatrics Society*, 39(2), 142-148.
- Pouli, N., Das Nair, R., Lincoln, N. B., & Walsh, D. (2014). The experience of living with knee osteoarthritis: exploring illness and treatment beliefs through thematic analysis. *Disability and rehabilitation*, 36(7), 600-607.
- Prasanna, S. S., Korner-Bitensky, N., & Ahmed, S. (2013). Why do people delay accessing health care for knee osteoarthritis? Exploring beliefs of health professionals and lay people. *Physiotherapy canada*, 65(1), 56-63.
- Protheroe, J., Saunders, B., Bartlam, B., Dunn, K. M., Cooper, V., Campbell, P., ... & Foster, N. E. (2019). Matching treatment options for risk sub-groups in musculoskeletal pain: a consensus groups study. *BMC Musculoskeletal Disorders*, 20(1), 271.
- Public Health England. (2020). Falls: applying All Our Health. Retrieved 12 February 2021, from <https://www.gov.uk/government/publications/falls-applying-all-our-health/falls-applying-all-our-health>
- Quicke, J. G., Foster, N. E., Thomas, M. J., & Holden, M. A. (2015). Is long-term physical activity safe for older adults with knee pain?: a systematic review. *Osteoarthritis and cartilage*, 23(9), 1445-1456.
- Raïche, M., Hébert, R., & Dubois, M. F. (2008). PRISMA-7: a case-finding tool to identify older adults with moderate to severe disabilities. *Archives of gerontology and geriatrics*, 47(1), 9-18.
- Ready for Ageing Alliance. (2014). Getting Ready for Ageing: a manifesto for action. Retrieved 1 June 2017, from http://www.cpa.org.uk/cpa/docs/Ready_for_Ageing_Alliance_Manifesto.pdf
- Ready for Ageing Alliance. (2016). Still not Ready for Ageing. Retrieved 1 June 2017, from http://www.cpa.org.uk/cpa/docs/R4AA/Still_not_ready_for_ageing.pdf
- Reid, M. C., Eccleston, C., & Pillemer, K. (2015). Management of chronic pain in older adults. *Bmj*, 350, h532.

- Richardson, J. C., Moore, A. J., Bernard, M., Jordan, K. P., & Sim, J. (2015). Living well with chronic pain in later life: The role and meaning of activity and involvement. *Activities, Adaptation & Aging*, 39(3), 200-213.
- Rockwood, K., Mogilner, A., & Mitnitski, A. (2004). Changes with age in the distribution of a frailty index. *Mechanisms of ageing and development*, 125(7), 517-519.
- Rosemann, T., Backenstrass, M., Joest, K., Rosemann, A., Szecsenyi, J., & Laux, G. (2007). Predictors of depression in a sample of 1,021 primary care patients with osteoarthritis. *Arthritis Care & Research*, 57(3), 415-422.
- Ruscheweyh, R., Nees, F., Marziniak, M., Evers, S., Flor, H., & Knecht, S. (2011). Pain catastrophizing and pain-related emotions: influence of age and type of pain. *The Clinical journal of pain*, 27(7), 578-586.
- Rustøen, T., Wahl, A. K., Hanestad, B. R., Lerdal, A., Paul, S., & Miaskowski, C. (2005). Age and the experience of chronic pain: differences in health and quality of life among younger, middle-aged, and older adults. *The Clinical journal of pain*, 21(6), 513-523.
- Ryan, C., & Roberts, L. C. (2018, February). INVESTIGATIONS FOR SCIATICA: THE PATIENT'S PERSPECTIVE. A QUALITATIVE, INTERPRETATIVE INQUIRY. In *Orthopaedic Proceedings* (Vol. 100, No. SUPP_2, pp. 23-23). The British Editorial Society of Bone & Joint Surgery.
- Ryan, C., Pope, C. J., & Roberts, L. (2020). Why managing sciatica is difficult: patients' experiences of an NHS sciatica pathway. A qualitative, interpretative study. *BMJ Open*, 10(6), e037157.
- Salaffi, F., Carotti, M., Stancati, A., & Grassi, W. (2005). Health-related quality of life in older adults with symptomatic hip and knee osteoarthritis: a comparison with matched healthy controls. *Aging clinical and experimental research*, 17(4), 255-263.
- Sale, J. E., Gignac, M., & Hawker, G. (2006). How "bad" does the pain have to be? A qualitative study examining adherence to pain medication in older adults with osteoarthritis. *Arthritis Care & Research: Official Journal of the American College of Rheumatology*, 55(2), 272-278.
- Sandelowski, M. (2000). Combining qualitative and quantitative sampling, data collection, and analysis techniques in mixed-method studies. *Research in nursing & health*, 23(3), 246-255.
- Sandelowski, M. (2008). Theoretical saturation. *The Sage encyclopedia of qualitative methods*, 1, 875-876.
- Sandelowski, M., & Leeman, J. (2012). Writing usable qualitative health research findings. *Qualitative health research*, 22(10), 1404-1413.
- Sanders, C., Donovan, J., & Dieppe, P. (2002). The significance and consequences of having painful and disabled joints in older age: co-existing accounts of normal and disrupted biographies. *Sociology of health & illness*, 24(2), 227-253.
- Saunders, B., Bartlam, B., Foster, N. E., Hill, J. C., Cooper, V., & Protheroe, J. (2016). General practitioners' and patients' perceptions towards stratified care: a theory informed investigation. *BMC family practice*, 17(1), 125.

Saunders, B., Hill, J. C., Foster, N. E., Cooper, V., Protheroe, J., Chudyk, A., ... & Bartlam, B. (2020). Stratified primary care versus non-stratified care for musculoskeletal pain: qualitative findings from the STarT MSK feasibility and pilot cluster randomized controlled trial. *BMC Family Practice*, 21(1), 31.

Saunders, B., Konstantinou, K., Artus, M., Foster, N. E., & Bartlam, B. (2020). Patients' and clinicians' perspectives on a 'fast-track' pathway for patients with sciatica in primary care: qualitative findings from the SCOPiC stratified care trial. *BMC musculoskeletal disorders*, 21(1), 1-15.

Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., ... & Jinks, C. (2018). Saturation in qualitative research: exploring its conceptualization and operationalization. *Quality & quantity*, 52(4), 1893-1907.

Schofield, P., & Abdulla, A. (2018). Pain assessment in the older population: what the literature says. *Age and ageing*, 47(3), 324-327.

Schofield, P. (2019, May 9). *National Guidelines for the Management of Pain in Older Adults*. The British Pain Society. Retrieved September 9, 2020, from https://www.britishpainsociety.org/static/uploads/resources/files/National_Guidelines_for_the_Management_of_Pain_in_Older_Adults_Consultation_Doc.pdf

Shannon-Baker, P. (2016). Making paradigms meaningful in mixed methods research. *Journal of mixed methods research*, 10(4), 319-334.

Shapiro, D. E. (1999). The interpretation of diagnostic tests. *Statistical methods in medical research*, 8(2), 113-134.

Sharafi, S. E., Hafizi, S., Shahi, M. H. P., Kordi, R., Noorbala, A. A., Arbabi, M., & Nejatisafa, A. A. (2017). The persian version of Örebro musculoskeletal pain screening questionnaire: Translation and evaluation of its psychometric properties. *International journal of preventive medicine*, 8.

Sharma, A., Kudesia, P., Shi, Q., & Gandhi, R. (2016). Anxiety and depression in patients with osteoarthritis: impact and management challenges. *Open access rheumatology: research and reviews*, 8, 103.

Sherrington, C., Tiedemann, A., Fairhall, N., Close, J. C., & Lord, S. R. (2011). Exercise to prevent falls in older adults: an updated meta-analysis and best practice recommendations. *New South Wales public health bulletin*, 22(4), 78-83.

Sim, J. (1998). Collecting and analysing qualitative data: issues raised by the focus group. *Journal of advanced nursing*, 28(2), 345-352.

Sim, J., & Waterfield, J. (2019). Focus group methodology: some ethical challenges. *Quality & Quantity*, 53(6), 3003-3022.

Sim, J., & Wright, C. (2000). *Research in health care: concepts, designs and methods*. Nelson Thornes.

Sim, J., Saunders, B., Waterfield, J., & Kingstone, T. (2018). Can sample size in qualitative research be determined a priori?. *International Journal of Social Research Methodology*, 21(5), 619-634.

Sions, J. M., & Hicks, G. E. (2011). Fear-avoidance beliefs are associated with disability in older American adults with low back pain. *Physical therapy*, 91(4), 525-534.

Slater, H., Jordan, J. E., Chua, J., Schütze, R., Wark, J. D., & Briggs, A. M. (2016). Young people's experiences of persistent musculoskeletal pain, needs, gaps and perceptions about the role of digital technologies to support their co-care: a qualitative study. *BMJ open*, 6(12).

Social Care Institute for Excellence. (2005). Helping older people to take prescribed medication in their own home: what works? Retrieved 1 June 2017, from <http://www.scie.org.uk/publications/briefings/briefing15/>

Smith, J., Borchelt, M., Maier, H., & Jopp, D. (2002). Health and well-being in the young old and oldest old. *Journal of Social Issues*, 58(4), 715-732.

Smith, T. (2017). "On their own": social isolation, loneliness and chronic musculoskeletal pain in older adults. *Quality in Ageing and Older Adults*.

Smith, T. O., Jimoh, O. F., Cross, J., Allan, L., Corbett, A., Sadler, E., ... & Fox, C. (2019). Social prescribing programmes to prevent or delay frailty in community-dwelling older adults. *Geriatrics*, 4(4), 65.

Smithson, J. (2000). Using and analysing focus groups: limitations and possibilities. *International journal of social research methodology*, 3(2), 103-119.

Sofaer-Bennett, B., Holloway, I., Moore, A., Lamberty, J., Thorp, T., & O'Dwyer, J. (2007). Perseverance by older people in their management of chronic pain: a qualitative study. *Pain medicine*, 8(3), 271-280.

Sofaer, B., Moore, A. P., Holloway, I., Lamberty, J. M., Thorp, T. A. S., & Dwyer, J. O. (2005). Chronic pain as perceived by older people: a qualitative study. *Age and ageing*, 34(5), 462-466.

Song, R., Lee, E. O., Lam, P., & Bae, S. C. (2003). Effects of tai chi exercise on pain, balance, muscle strength, and perceived difficulties in physical functioning in older women with osteoarthritis: a randomized clinical trial. *The Journal of Rheumatology*, 30(9), 2039-2044.

Spitz, A., Moore, A. A., Papaleontiou, M., Granieri, E., Turner, B. J., & Reid, M. C. (2011). Primary care providers' perspective on prescribing opioids to older adults with chronic non-cancer pain: a qualitative study. *BMC geriatrics*, 11(1), 35.

Steyerberg, E. W., Vickers, A. J., Cook, N. R., Gerds, T., Gonen, M., Obuchowski, N., ... & Kattan, M. W. (2010). Assessing the performance of prediction models: a framework for some traditional and novel measures. *Epidemiology (Cambridge, Mass.)*, 21(1), 128.

Storheim, K., & Zwart, J. A. (2014). Musculoskeletal disorders and the Global Burden of Disease study.

Stubbs, B., Aluko, Y., Myint, P. K., & Smith, T. O. (2016). Prevalence of depressive symptoms and anxiety in osteoarthritis: a systematic review and meta-analysis. *Age and ageing*, 45(2), 228-235.

Stubbs, B., Schofield, P., Binnekade, T., Patchay, S., Sepehry, A., & Eggermont, L. (2014). Pain is associated with recurrent falls in community-dwelling older adults: evidence from a systematic review and meta-analysis. *Pain Medicine*, 15(7), 1115-1128.

Sullivan, M. J., Thorn, B., Haythornthwaite, J. A., Keefe, F., Martin, M., Bradley, L. A., & Lefebvre, J. C. (2001). Theoretical perspectives on the relation between catastrophizing and pain. *The Clinical journal of pain*, 17(1), 52-64.

The British Pain Society. (2013, November). *Guidelines for Pain Management Programmes for adults*. Retrieved September 9, 2020, from https://www.britishpainsociety.org/static/uploads/resources/files/pmp2013_main_FINAL_v6.pdf

The King's Fund. (2017, February 2). *What is social prescribing?* Retrieved September 9, 2020, from <https://www.kingsfund.org.uk/publications/social-prescribing>

Thomas, E., Peat, G., Harris, L., Wilkie, R., & Croft, P. R. (2004). The prevalence of pain and pain interference in a general population of older adults: cross-sectional findings from the North Staffordshire Osteoarthritis Project (NorStOP). *Pain*, 110(1-2), 361-368.

Tinetti, M. E. (1986). Performance-oriented assessment of mobility problems in elderly patients. *Journal of the American Geriatrics Society*, 34(2), 119-126

Todd, C., Camic, P. M., Lockyer, B., Thomson, L. J., & Chatterjee, H. J. (2017). Museum-based programs for socially isolated older adults: understanding what works. *Health & place*, 48, 47-55.

Tongco, M. D. C. (2007). Purposive sampling as a tool for informant selection. *Ethnobotany Research and applications*, 5, 147-158.

Traeger, A. C., Buchbinder, R., Elshaug, A. G., Croft, P. R., & Maher, C. G. (2019). Care for low back pain: can health systems deliver?. *Bulletin of the World Health Organization*, 97(6), 423.

Turner, A. P., Barlow, J. H., Buszewicz, M., Atkinson, A., & Rait, G. (2007). Beliefs about the causes of osteoarthritis among primary care patients. *Arthritis care & research*, 57(2), 267-271.

Turner, J. A., Mancl, L., & Aaron, L. A. (2004). Pain-related catastrophizing: a daily process study. *Pain*, 110(1-2), 103-111.

Turner, G., & Clegg, A. (2014). Best practice guidelines for the management of frailty: a British Geriatrics Society, Age UK and Royal College of General Practitioners report. *Age and ageing*, 43(6), 744-747.

UK Government. (2015). *Challenges of an ageing population*. Retrieved September 9, 2020, from <https://www.parliament.uk/business/publications/research/key-issues-parliament-2015/social-change/ageing-population/>

United Nations. (2015). World Population Ageing 2015. Retrieved from http://www.un.org/en/development/desa/population/publications/pdf/ageing/WPA2015_Report.pdf

United Nations. (2020, May 18). *Ageing*. Retrieved September 9, 2020, from <https://www.un.org/en/sections/issues-depth/ageing/>

Van Dyck, D., Mertens, L., Cardon, G., De Cocker, K., & De Bourdeaudhuij, I. (2017). Opinions toward physical activity, sedentary behavior, and interventions to stimulate active living during early retirement: a qualitative study in recently retired adults. *Journal of aging and physical activity*, 25(2), 277-286.

Veronese, N., Maggi, S., Trevisan, C., Noale, M., De Rui, M., Bolzetta, F., ... & Stubbs, B. (2017). Pain increases the risk of developing frailty in older adults with osteoarthritis. *Pain medicine*, 18(3), 414-427.

Versus Arthritis. (2019). *State of musculoskeletal health 2019*. Retrieved September 9, 2020, from <https://www.versusarthritis.org/about-arthritis/data-and-statistics/state-of-musculoskeletal-health-2019/>

Vinogradova, Y., Hippisley-Cox, J., & Coupland, C. (2009). Identification of new risk factors for pneumonia: population-based case-control study. *British Journal of General Practice*, 59(567), e329-e338.

Violan, C., Foguet-Boreu, Q., Flores-Mateo, G., Salisbury, C., Blom, J., Freitag, M., ... & Valderas, J. M. (2014). Prevalence, determinants and patterns of multimorbidity in primary care: a systematic review of observational studies. *PloS one*, 9(7), e102149.

Vlaeyen, J. W., & Linton, S. J. (2000). Fear-avoidance and its consequences in chronic musculoskeletal pain: a state of the art. *Pain*, 85(3), 317-332.

von Faber, M., van der Geest, G., van der Weele, G. M., Blom, J. W., van der Mast, R. C., Reis, R., & Gussekloo, J. (2016). Older people coping with low mood: a qualitative study. *International psychogeriatrics*, 28(4), 603-612.

Waddell, G. (1987). 1987 Volvo award in clinical sciences: a new clinical model for the treatment of low-back pain. *Spine*, 12(7), 632-644.

Wade, K. F., Marshall, A., Vanhoutte, B., Wu, F. C., O'Neill, T. W., & Lee, D. M. (2017). Does pain predict frailty in older men and women? Findings from the English Longitudinal Study of Ageing (ELSA). *The Journals of Gerontology: Series A*, 72(3), 403-409.

Wenger, G. C., Davies, R., Shahtahmasebi, S., & Scott, A. (1996). Social isolation and loneliness in old age: review and model refinement. *Ageing & Society*, 16(3), 333-358.

Wheeler, L. P., Karran, E. L., & Harvie, D. S. (2018). Low back pain: Can we mitigate the inadvertent psycho-behavioural harms of spinal imaging?. *Australian journal of general practice*, 47(9), 610.

Wilcox, S., Dowda, M., Griffin, S. F., Rheaume, C., Ory, M. G., Leviton, L., ... & Estabrooks, P. A. (2006). Results of the first year of active for life: translation of 2 evidence-based physical activity programs for older adults into community settings. *American Journal of Public Health*, 96(7), 1201-1209.

Wiles, J. L., Wild, K., Kerse, N., & Allen, R. E. (2012). Resilience from the point of view of older people: 'There's still life beyond a funny knee'. *Social science & medicine*, 74(3), 416-424.

- Williams, H. C., Burden-Teh, E., & Nunn, A. J. (2015). What is a pragmatic clinical trial. *J Invest Dermatol*, 135(6), 1-3.
- World Health Organisation. (2002). Active ageing: A policy framework. Retrieved 1 June 2017, from http://apps.who.int/iris/bitstream/10665/67215/1/WHO_NMH_NPH_02.8.pdf
- World Health Organisation. (2018). Falls – Fact Sheet. Retrieved 20 February 2021, from <https://www.who.int/news-room/fact-sheets/detail/falls>
- World Health Organisation. (2020). *What is healthy ageing?* World Health Organization. Retrieved September 9, 2020, from <https://www.who.int/ageing/healthy-ageing/en/>
- Wolf, M. S., Gazmararian, J. A., & Baker, D. W. (2005). Health literacy and functional health status among older adults. *Archives of internal medicine*, 165(17), 1946-1952.
- Wong, L. P. (2008). Focus group discussion: a tool for health and medical research. *Singapore Med J*, 49(3), 256-60.
- Wood, B. M., Nicholas, M. K., Blyth, F., Asghari, A., & Gibson, S. (2013). Catastrophizing mediates the relationship between pain intensity and depressed mood in older adults with persistent pain. *The Journal of Pain*, 14(2), 149-157.
- Woolf, A. D. (2015, December). Global burden of osteoarthritis and musculoskeletal diseases. In *BMC Musculoskeletal Disorders* (Vol. 16, No. 1, pp. 1-1). BioMed Central.
- Yagci, N., Cavlak, U., Aslan, U. B., & Akdag, B. (2007). Relationship between balance performance and musculoskeletal pain in lower body comparison healthy middle aged and older adults. *Archives of gerontology and geriatrics*, 45(1), 109-119.
- Yvonne Feilzer, M. (2010). Doing mixed methods research pragmatically: Implications for the rediscovery of pragmatism as a research paradigm. *Journal of mixed methods research*, 4(1), 6-16.
- Zarit, S. H., Griffiths, P. C., & Berg, S. (2004). Pain perceptions of the oldest old: a longitudinal study. *The Gerontologist*, 44(4), 459-468.
- Zoubi, F. M. A., French, S. D., Patey, A. M., Mayo, N. E., & Bussi eres, A. E. (2019). Professional barriers and facilitators to using stratified care approaches for managing non-specific low back pain: a qualitative study with Canadian physiotherapists and chiropractors. *Chiropractic & manual therapies*, 27(1), 68.

Appendices

Appendix 1: Ethical approval from NHS REC

Appendix 1: Ethics approval



East Midlands - Nottingham 1 Research Ethics Committee

The Old Chapel
Royal Standard Place
Nottingham
NG1 6FS

Please note: This is the favourable opinion of the REC only and does not allow the amendment to be implemented at NHS sites in England until the outcome of the HRA assessment has been confirmed.

13 August 2018

Ms Hollie Birkinshaw
Research Institute for Primary Care & Health Sciences
Keele University
ST5 5BG

Dear Ms Birkinshaw

Study title:	Stratified Primary Care for Musculoskeletal Pain: The STarT MSK Trial [Patient facing name the TAPS study]
REC reference:	16/EM/0257
Protocol number:	RG-0037-16-IPCHS
Amendment number:	3
Amendment date:	25 July 2018
IRAS project ID:	186079

The above amendment was reviewed on 13 August 2018 by the Sub-Committee in correspondence.

Ethical opinion

The members of the Committee taking part in the review gave a favourable ethical opinion of the amendment on the basis described in the notice of amendment form and supporting documentation.

The Sub-Committee agreed that the substantial amendment did not raise any material ethical issues.

Approved documents

The documents reviewed and approved at the meeting were:

<i>Document</i>	<i>Version</i>	<i>Date</i>
Letters of invitation to participant [TAPS Main Trial Initial Letter of Invitation v1.1 18May2018 TC.doc]	1.1	19 July 2018
Non-validated questionnaire [TAPS Main Trial 6M Questionnaire Back Pain v1.2 16Jul2018.pdf]	1.2	16 July 2018
Non-validated questionnaire [TAPS Main Trial 6M Questionnaire Knee Pain v1.2 16Jul2018.pdf]	1.2	16 July 2018
Non-validated questionnaire [TAPS Main Trial 6M Questionnaire Neck Pain v1.2 16Jul2018.pdf]	1.2	16 July 2018
Non-validated questionnaire [taps main trial 6m questionnaire pain v1.2 16jul2018.pdf]	1.2	16 July 2018
Non-validated questionnaire [TAPS Main Trial 6M Questionnaire Shoulder Pain v1.2 16Jul2018.pdf]	1.2	16 July 2018
Non-validated questionnaire [TAPS Main Trial Initial Questionnaire Neck Pain v1.2 16Jul2018.pdf]	1.2	16 July 2018
Non-validated questionnaire [TAPS Main Trial Initial Questionnaire Pain v1.2 16Jul2018.pdf]	1.2	16 July 2018
Non-validated questionnaire [TAPS Main Trial Initial Questionnaire Shoulder Pain v1.2 16Jul2018.pdf]	1.2	16 July 2018
Non-validated questionnaire [TAPS Main Trial Initial Questionnaire Back Pain v1.2 16Jul2018.pdf]	1.2	16 July 2018
Non-validated questionnaire [TAPS Main Trial Initial Questionnaire Knee Pain v1.2 16Jul2018.pdf]	1.2	16 July 2018
Notice of Substantial Amendment (non-CTIMP) [TAPS SA3 AmendmentForm_FINAL 25 07 18.pdf]	3	25 July 2018
Other [TAPS Main Trial Initial Invitation Reminder Letter v1.1 18May2018 TC.doc]	1.1	18 May 2018
Other [STarT MSK Tool clinical version substantial amendment changes v1.0 12Jul2018.docx]	1.0	12 July 2018
Other [TAPS Amendment Summary SA 03 19Jul2018 v1.0 19Jul2018.docx]	1.0	19 July 2018
Other [TAPS GDPR Data Leaflet v1.0 22May2018.pdf]	1.0	22 May 2018
Research protocol or project proposal [STarT MSK Main Trial Protocol v1.2 19Jul2018 TC.docx]	1.2	19 July 2018

Membership of the Committee

The members of the Committee who took part in the review are listed on the attached sheet.

Working with NHS Care Organisations

Sponsors should ensure that they notify the R&D office for the relevant NHS care organisation of this amendment in line with the terms detailed in the categorisation email issued by the lead nation for the study.

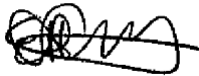
Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

We are pleased to welcome researchers and R & D staff at our Research Ethics Committee members' training days – see details at <http://www.hra.nhs.uk/hra-training/>

16/EM/0257:	Please quote this number on all correspondence
--------------------	---

Yours sincerely



Pp
Ellen Milazzo Chair

E-mail: NRESCCommittee.EastMidlands-Nottingham1@nhs.net

Enclosures: List of names and professions of members who took part in the review

Copy to: Ms Lauren Thakrar, Primary Care Research Support Team, NIHR CRN West Midlands

Appendix 2: Patient invitation letter



[Participant name]
[Participant address]
[Participant address]
[Postcode]

Our ref: [Study ID number]
Date: [Date]

Dear [Participant name],

We are writing to you as you have recently completed and returned a questionnaire for the Treatment for Aches and Pains Study (TAPS) about your recent GP consultation for muscle or joint pain.

We would also like to know about older adults' experiences of their primary care consultation and their health. Taking part in this study will involve meeting a researcher for a face-to-face interview. There is a participant information sheet included with this letter with the details of the study. Please take the time to read this through.

A researcher will contact you on the telephone number that you provided for the TAPS trial within the next 2-7 days to ask if you wish to take part in this study. Please remember you are free to decide whether you want to take part. **Your healthcare will not be affected in any way, whether or not you decide to take part.** The study has received formal NHS ethical approval and all of your details will be kept in the strictest confidence.

I would like to thank you for taking part in the TAPS study. If you have any queries, please do not hesitate to contact the TAPS study team during office hours on **01782 734987**.

Yours sincerely,

[electronic signature]

[insert researchers name as appropriate]
on behalf of the TAPS research team



Research Institute for Primary Care and Health Sciences
Tel: +44 (0)1782 733905
Fax: +44 (0)1782 734719
www.keele.ac.uk/pchs

Keele University, Staffordshire ST5 5BG, UK



EXPERIENCES OF A PRIMARY CARE CONSULTATION FOR OLDER ADULTS WITH MUSCLE AND JOINT PAIN

PARTICIPANT INFORMATION SHEET

You have been invited to take part in a research study looking at your experience of visiting your GP for muscle or joint pain.

Why is this research being done?

We are trying to find the best way for GPs to treat people with muscle or joint pain. This is the TAPS study that is being carried out by the Research Institute of Primary Care and Health Sciences at Keele University. As part of this, we are interested in the views and experiences of older adults in relation to their health and GP consultation. This will form a PhD study undertaken by Hollie Birkinshaw, which is a smaller study within the TAPS study. |

Why have I been invited to participate?

You have been invited to participate as you recently consented to taking part in the Treatment for Aches and Pains Study (TAPS). This was in a GP appointment that you attended recently about to muscle or joint pain.

What does taking part in the research involve?

Taking part will involve meeting with a researcher for an interview about your experience of your own health, the healthcare you have received and of your recent visit to your GP for around 1 – 1½ hours. This can take place at either your GP surgery, Keele University, or your own home. There may also be a follow-up telephone interview a couple of weeks after the first interview, which will last for around half an hour. These interviews are not evaluating

your GPs performance, and they will not know what you have said. There are no right or wrong answers.

How do I take part?

A researcher will be in contact via telephone within the next week to discuss whether you wish to participate in this study. You will be given at least 48 hours from receipt of this information leaflet to consider taking part. If after this telephone call you wish to think about this longer, then the researcher will arrange to call you again about a week later.

It is completely up to you whether to take part in the study. If you do not wish to take part this will not affect the care you receive in any way.

What happens if I change my mind about taking part?

If you change your mind during the interview then the researcher will end the interview immediately. You can also withdraw your data for up to 4 weeks after the interview by contacting the researcher and giving your unique study ID number. After 4 weeks, your data will then be part of the study dataset and cannot be withdrawn.

What will happen to the information that I give?

All the information that you give will be treated in the strictest confidence. Any identifying information (e.g. names, places of work) will be removed so that all data is anonymous.

The recorded interview will be written up by the researcher. Your GP will not know what you have said in the interviews. Some quotes may be used in publications or presentations, but these will not have any identifying information in them.

All of your personal data will be treated in line with the Data Protection Act. Both paper and digital files will be stored securely at Keele University. Only approved members of staff will have access to this. All data will be destroyed after 5 years apart from the anonymised transcripts.

This research has been approved by [ethics board] Research Ethics Committee (Reference) and is funded by Keele University through its ACORN program.

Appendix 4: Consent form



EXPERIENCES OF A PRIMARY CARE CONSULTATION FOR OLDER ADULTS WITH MUSCLE AND JOINT PAIN

CONSENT FORM

To complete this form, please initial the boxes and sign below

I have read and understood the participant information leaflet

☐

I have had the opportunity to ask questions and have received satisfactory answers where needed

☐

I understand that my participation is voluntary, that I can withdraw from the interview at any time, without giving a reason, and that this will not affect the care I receive

☐

I understand that I can withdraw my data from the study up to four weeks after participating without giving a reason

☐

I agree for my data to be used in future research studies subject to ethical approval

☐

I agree to take part in the above study

☐

Please print your name, sign and date below:

Print name

Signature

Date

Name of researcher

Signature

Date

Appendix 5: Topic guide: patient interviews



TAPS Interview Topic Guide: Patient

1. Introduction

- a. Check that participant has read and understood the PIS.
- b. Explain arrangements for: consent, recording, anonymity, expenses where appropriate etc.
- c. Invite participants to expand on responses.

2. Experience of MSK pain/ previous help-seeking and treatment:

- a. Ask about previous experiences of MSK pain/ past treatments received etc. (*not in detail, but as context for understanding how patients experienced stratified care*).
- b. How long have you had your pain? Lifecourse perspective
 - i. Do you have any ideas about what caused your pain?
- c. Is pain something that has an impact on your life – if so, how?
 - i. If long-term, how has the impact changed over the course of the pain?
 - ii. If long-term, or prognosis is long-term (e.g. arthritis) what is the role of acceptance in relation to pain? Is this age-related?
- d. How, if at all, has pain impacted your mood?
 - i. Feeling low, depression, anxiety, annoyance, emotions, anger
- e. Do you find managing your pain difficult? If so, what sort of things do you find make managing your pain more difficult?
 - i. Other illnesses, attitudes, social factors (e.g. help)
- f. What is your experience of social support for your pain? – family, partner, GP

3. Views on consultation in which stratified care was used:

- a. Decision to attend/expectations of GP consultation
 - i. Why did you decide to go to the GP about your pain?
 - Did anyone in your family suggest visiting your GP?
 - ii. Expectations of GP consultation – were these expectations met? If not, what are the reasons for this?
- b. Shared decision-making/involvement:
 - i. Initiation of referrals, feeling involved in treatment plan, choice about your treatment options, discussion of non-referral
 - ii. Understanding of information/ advice given, e.g. issues around health literacy.
- c. Reassurance and feeling listened to
 - i. Communication, trust
- d. What advice did the GP give, and did they follow the advice? If not, why?
- e. Has there been any impact on activities as a result of the consultation?
- f. Was your recent GP consultation different to any of your previous GP consultations?



4. STarT MSK tool

- a. Thinking about what we've just talked about, do you think these questions [STarT MSK tool] address what you would like from a consultation?
- b. Do you think they would help you or your GP make treatment decisions?
- c. Is there anything you'd add/remove/change → understanding

5. Treatment and management since the GP consultation:

- a. Do you know what your treatment plan is for your pain?
 - i. Do you have a goal for your treatment?
- b. Did your GP make any referrals for you?
- c. If so, what do you expect of this treatment, what do you expect to happen or get from the treatment?

For medium/high risk patients; these questions may be asked in follow up telephone interviews for Hollie's interviews.

- a. Experiences of pain since their consultation
- b. Explore views/ experiences of treatment received (if any) since initial GP consultation:
 - I. Views on suitability and satisfaction of treatment received.
 - II. Waiting time – acceptability of this?
 - III. Were their expectations met?
 - IV. If they received physiotherapy, what advice were they given and did they follow this advice?
 - i. Communication between physiotherapist and patient
 - V. Have they been back to see their GP – if so, what prompted the decision to re-consult?
- c. If treatment made a difference, explore what patients feel were the key aspects that contributed to this improvement:
 - I. Prompt re factors such as engagement in physical activity, confidence/ self-efficacy, psychological aspects (e.g. low mood/anxiety), therapeutic relationship, reassurance, medication etc.

6. Close of discussion

- a. Any other final remarks/additional views.
- b. Check consent is still in place.
- c. Reimbursement of travel expenses etc. (where appropriate).
- d. Consent for follow-up telephone interview

Appendix 6: Topic guide: clinician focus groups



TAPS Focus Group Topic Guide: GPs

1. Introduction

- a. Check that participants have read and understood the PIS.
- b. Explain arrangements for consent, recording, anonymity, expenses where appropriate etc.
- c. Group rules: no right or wrong answers, take turns in speaking
- d. Invite participants to expand on responses.
- e. Very brief overview of PhD, mainly focus on the rationale for older adults → previous research has suggested that older adults may have different experiences of MSK pain than younger adults

2. Factors that contribute to the complexity of managing MSK pain for older adults

- a. Do you find MSK pain harder to manage in older adults? If so, why?
- b. How do these factors make consultations differ from other MSK consultations?
- c. What is the impact of these factors upon:
 - i. The consultation [therapeutic relationship, balancing comorbidities]
 - ii. Deciding upon and recommending treatments
 - iii. Older adults' daily lives?
- d. How do you try to address these factors? Barriers
 - i. Do you think that the stratified care approach helps to address these factors?

3. Elements of a good consultation for older adults with MSK pain

Thinking about the things discussed above...

- a. What things do you think are important for consultations to have for older adults, and why?
 - i. Psychosocial factors?
 - ii. Do you think the stratified care approach incorporates these elements?
- b. How do you balance these different demands?

4. Outcomes for older adults with MSK pain for older adults

- a. What are the best outcomes for older adults from a GP consultation [medication, physio, referral etc]
 - i. Prompt → think about psychological and social factors
- b. What is your experience of shared-decision making with older adults in a consultation for MSK pain?
- c. Do you think that GPs and older adults have the same opinions regarding treatments and outcomes for MSK pain? How do they differ?
- d. Do you think that the matched treatments in the STarT MSK trial are suitable for older adults?

5. Close of discussion

- a. Any other final remarks/additional views.
- b. Check consent is still in place.

Appendix 7: Reflexive contact form

Post interview/focus group reflective summary form

Type:

Date:

Reference:

What were the main themes or issues that struck you?

Summarise the information you got (or failed to get) for the following bullet points:

Complexity:

Elements of a good consultation:

What makes a good outcome?

Was there anything else that struck you as salient, interesting or important?

What new (or remaining) questions do you have?

Appendix 8: Examples of coding qualitative data

62 - low risk
Shoulder pain

Participant 1 - Harry

R: So just to start really, just tell me a bit about yourself

HARRY: I am just coming up to 83 years old, I have been a widower for 17 years now, I spent my working life mainly in sales, public relations, publicity, will that do for you?

R: Perfect

HARRY: That's fine, there you are, that's my background

R: Thank you. And, so the reason that I had your information was because you went to the GP, [HARRY: Yes], just what sort of issue was that for?

HARRY: Well, about 4 or 5 months ago I began to get a pain in my right shoulder, and initially I thought 'oh, you've been in a draft, oh well, week, 10 days that'll go, and it didn't and then I remembered that some 40 years ago I'd had to go to the doctor because I'd got what was then called tennis elbow, and I thought I've got something similar, it's repetitive strain, nevermind, you've got your annual visit to your GP before long, ring up, make that appointment which I did, six weeks but we'll pass over that and so once he'd gone through the usual annual checks I told him I'd had occasional difficulty with the right shoulder, he gave me an examination and then said something which I had never had cross my mind 'you've got arthritis'. So he then printed off an Arthritis UK sheet which he gave me which basically gave me the background to arthritis, I supplemented this with getting a book about it so I would know what I was dealing with, and of course the print out also instructed me on various exercises to do. And those I did, still do, and within 10 to 14 days there had been a remarkable improvement. Basically I think during the time I was waiting to see the doctor under the impression that I'd got something else I had used the right arm as little as possible - entirely the wrong thing to do. So the moment I was using it properly, doing the right exercises it was just what it needed, it gave a sigh of relief and said there you are, if you keep on doing that you'll be much better. The result being that now, there are a good many days when I forget I've got any problem at all. There are others of course where I think 'ohh god, at least I know what it is now and I'm fighting it' so that's the basic background.

R: Okay, so you mentioned apart from about 40 years ago when you'd had that tennis elbow, had you ever sort of had any musculoskeletal pain, sort of aches, joint pain at all?

HARRY: No! I've been remarkably lucky I've got a robust constitution and obviously everybody has something wrong with them at sometime or other, but if you're robust usually you're able to push it away, get rid of it, get through it or get the treatment for it and there you are. And that's my position as well.

R: Okay, so, since you've sort of, been to your GP have you found it difficult to manage or..?

HARRY: Nope! Not at all. I don't let it be apart from anything else, I did in early days on reading a print out and with it at that time at the worst it had been follow the advice that had said if you're going to do something strenuous take a painkiller beforehand, which I did, and then as I say things improved, the result being that I haven't taken a painkiller for weeks now, don't need one, but they're here in the house if I do.

Handwritten notes and codes:

- working out a course*
- involved in own care*
- adherence*
- understanding*
- pain timescale*
- expectations of pain*
- previous experience*
- reason to attend GP*
- diagnosis*
- education*
- knowledge*
- improvement*
- knowledge*
- fighting it*
- physical health*
- resilience?*
- attitude to pain impact*
- following advice*
- use of painkillers*
- adapting*
- prepared*

R: So when you do have the discomfort or pain, does it impact on your life at all?

HARRY: Well again, I don't let it. I may think to myself 'oh don't do that bit of work in the garden till tomorrow' but that's about the worst it gets, I'm perfectly well able to keep this house going, to lead my usual social life, doesn't have any impact on that at all. I fully appreciate that as the years go by it may, but it certainly doesn't at the moment.

R: So that's something you anticipating or aware of?

HARRY: I'm just aware of. I'm not saying it's an absolute 100% certainty that in a couple of years I shan't be able to move, no not at all! But one deals with it as it comes along.

[pause - receives a package at the door]

R: And so, were you saying that it was sort of intermittent pain, like you have days when you're not..

HARRY: Well yes, I found in early times that in bed for example, it was a mistake to think that I could go to sleep lying on my right hand side, because I was awake again within about half an hour, thinking 'ooh golly, fair enough, you go to sleep on your left hand side', it hasn't interfered with my sleep patterns but obviously one moves around during sleep and I get that 'ooh' slightly waking up for a few seconds 'oh turn over' business, but that's the worst it is, but I would be waking up in any case, you know, it doesn't matter

R: So when you have it, what sort of it, is pain, is it ache, is it discomfort?

HARRY: It's a basic dull ache, it doesn't stop me I say, moving about and yet on the other hand I discovered the other day that if I put my arms up and come down like this [demonstrates] then yes, on both sides it's a bit tight, but then how often does one want in one's life want to do that, you know?

R: Not very often!

HARRY: No! I only discovered that by chance, you know

R: Okay, and are there any other things, from what you've said to me it's probably not, but are there any other sort of things that make it more difficult to manage?

HARRY: No, I've obviously got to an age where there are one or two other problems and, I've got a prostate problem, the old man's problem, so that has a darn sight more effect on how I need to lead my life than this bit of arthritis does. I've got a problem with the right leg which again requires exercises which I do and can therefore cope, that's okay, having last year given up driving I'm doing a bit more walking now which is probably a good thing. So I don't hop into the car to go and buy the paper, get a pint of milk or whatever it is. Either I go to the local shops which are just over half a mile away so I'll walk downhill, I don't like walking uphill now but I get the bus back, or if I'm going further afield I now use my bus pass and that means a walk down to the hospital, 400 yards away, and whatever is required at the other end. But that's not affected by the arthritis at all.

aging

awareness of age

pain but picking about it, unhelped or positive

attitude

age = negative implications awareness of age

minimal impact on life identifying important things

negative implications of age

attitude to age coping resilience

pain & sleep adapting to pain

pain descriptor

appraisal & framing of limitations

age & health

comorbidity structuring of hierarchy of comorbidity coping relies on being able to do something

minimal impact

Focus Group 3

R: So it's to think about older adults with musculoskeletal pain, so I've defined that as age 65 or over and looking at the different levels, so the oldest-old of 80, 85+, just to give you a bit of context when we're talking. So I guess to start off with, what are your experiences of working with older adults with musculoskeletal pain in GP or in physiotherapy?

Becky: Well it's quite variable, still get quite a lot fit people who are over 65, still competing, running races, triathalons, swimming, and then you get the other end of the spectrum so it's still quite **widely diverse** even at 65 in terms of their activities and things. I think as they get older, particularly as you start to get into the late 70s, 80s, **some of them can present quite stoically** and not really give you a true impression of how much pain they're actually in, not initially anyway **until they feel like they can actually open up and trust you** I suppose in a sense. Harder to build a rapport sometimes with the really stoical ones.

R: Do you find that as well?

Callum: Absolutely. I think there's a really interesting thing going on in primary care about **responsibility for lifestyle choices** and just particularly relating to **obesity or being overweight** which is obviously intricately related to joint degeneration, not just weight bearing joints I understand even your fingertips can change if you're obese but very recently there's a public outcry that GPs weren't trained in nutrition as if somehow **it was our fault** that people chose to eat the wrong kinds of food when they were young all the way through their adult lives and I just wondered at **what stage we became responsible for everything that ever went wrong** and I think the world is divided into two groups of people, broadly as a black or white kind of doctor, there's people who take responsibility try and get on top of things, understand their symptoms and then make the best of what they've got and those are the people who're fell running with sore knees and riding their bikes around and keeping fit and healthy and there's people who just sit and you know everything comes to them and they just take it and they grind to this halt and generally the ones who come and they sort of get through the door sideways cause they can't come through front on and they want their knee replacement and they want it tomorrow knowing full well that it's a disaster to have a knee replacement cause if you're grossly obese and you replace a knee you don't recover. So it's very much you know two different sorts of people and the big message for a lot of people with arthritis is we need to change your lifestyle not we need to fix your joint and I'm afraid that falls on deaf ears so often so it's an **incredibly complex presentation** now 'my knee hurts doctor' you can be lifting a scab to a huge **lifelong wound** and it can be a very long consultation.

R: That's really interesting taking that sort of lifecourse perspective and it sounds like, yeah you either get these active engaged patients or quite passive-

Becky: Definitely. Yeah, there's definitely those that want, yeah you ask them what's your expectations of today and 'I just want some advice on how to manage it' and you've got some that'll just sit there and 'I don't know **I just came here cause the doctor sent me here**' and you know, you've either got people who want to self-manage or you've got people who're just 'take it away, I don't know how you're going to take it away but just take it away'.

patient individual differences
physical function
stoicism
pain assessment
trust
rapport

GP responsibility
lifestyle weight
GP knowledge
lifecourse perspective
GP responsibility
patient responsibility
patient attitudes
patient engagement
patient demands

in lifestyle changes
complexity
consultation length

patient expectations
patient engagement
patient self-management
pain relief

Callum: But even, sorry to harp on, but having a BMI of 30 [Becky: Yeah] it's not massively overweight but it's been normalised [Becky: Yeah, yeah. Definitely] so that they're 'what you're saying I'm fat doctor you know, there's no fat on me!'. Their BMI's low 30s that normal, that's what they see as normal so losing weight isn't an easy thing to do for anyone but to talk about it in the context of Becky, joint pain is challenging and in terms of how long do you have to talk to this person, how do you open up that conversation, it's complicated.

weight normalisation
joint weight & joint pain

R3: Do you think with older people who are overweight and very passive about things, they've actually been influenced by media or by others to expect a knee replacement? I mean it's interesting the polarity between the stoics who would do a lot for themselves who if anything are likely to have joint replacements too late rather than appropriately timed and the others-

Callum: Maybe, I've got theories about which newspapers they read and does that affect their-

R3: Do you have any, do you have conversations with them about where they get their information from?

Callum: Yeah absolutely. You know there are some people who are using the internet and they research things and people come in very well informed and I don't think there's any limits on age because we've got some people who are in their tenth decade who're using iPads but I think that over 85 generation is probably not quite so internet savvy, they might be using mobile phones and stuff and they won't have googled their symptoms before they come in. But I think people are better informed but the older ones maybe not so.

use of the internet
patient knowledge
age & technology use (patient)
oldest old
patient knowledge

R3: Is there, it's just a vague impression I've got and I don't know whether it's true or not, my sense is that the big problem of obesity and indolence and MSK problems is more of a younger person's problem and less of an older person's problem, is that..?

Callum: I don't know whether I agree with that

R3: No that's why I was throwing it out there

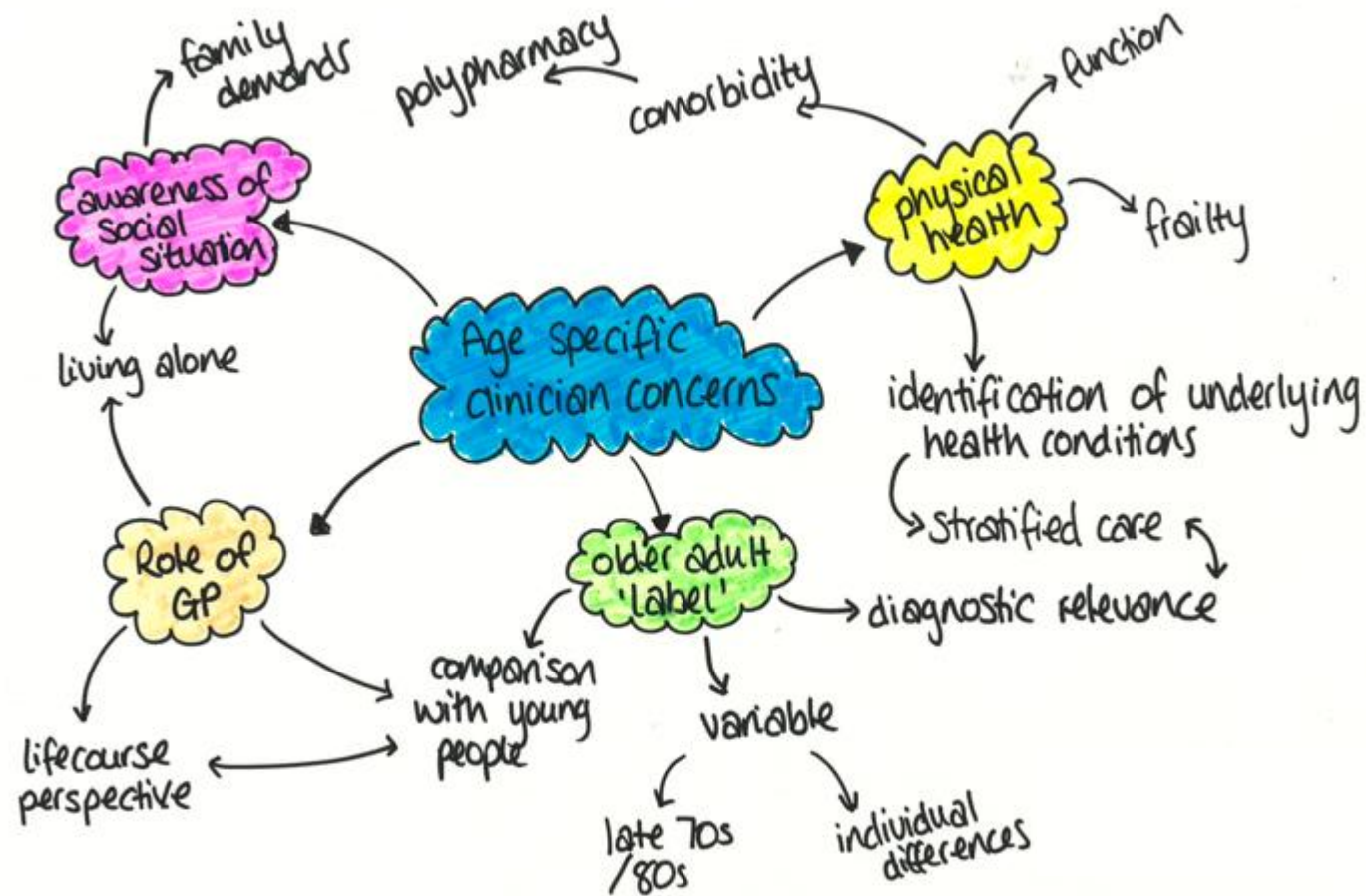
Callum: So there's, I mean a young person who is overweight you can say well you've got your whole life ahead of you, there's all this reason to change. Someone who's 70 who's been 20 stone for the last 40 years and you say 'well why are you 20 stone?' 'I've always been 20 stone doctor and no-one's ever said anything before why is it an issue?' and I think it's probably a bigger problem because the mindset is stuck. I don't know, it's my experiences, I think it's a really interesting conversation cause you have to sort of railroad them into a different consultation to the one they came in with.

lifecourse
message framing
patient attitudes
patient expectations
of consultation

Becky: Oh definitely I mean from a physio point of view sometimes you're not physio in that consultation, you're dietitian or CBT or you know, you're doing everything other than what you define as physio. Just having awkward, sometimes difficult conversations. I went on a course recently and they said if you have these conversations and you're opening a can of worms make sure you can put the worms back in [all laugh]. You know where you're going to send them. But you know it's important to address, you know if they're sat there and there's a, excuse

role of clinician / physio
clinician knowledge
managing complexity
clinician responsibility

Appendix 9: Mind maps and thematic maps



Age-Specific Clinician Concerns

	The 'older adult' label	Physical health	Patient social situation	Systemic issues
<p>Focus Group 1</p> <ul style="list-style-type: none"> - James - Sunil - Piyas - Matt - Yasmin - Amelia - Allison 	<ul style="list-style-type: none"> - lots of variability between older adults of the same age - physical function is associated with being 'older' - younger generations come with more minor things → stoicism - changing of the 'older' generation - 'biological' & 'chronological' age 	<ul style="list-style-type: none"> - comorbidities, capacity - prioritisation of MSK pain in a consultation - polypharmacy - frailty & age - unconfused alone could miss malignancies ↳ worried about missing these - age is a diagnostic marker 	<ul style="list-style-type: none"> - family can help the GP understand how pain is affecting an older adult if they are more stoical - family may encourage an older adult to go to the GP for their pain - lack of family/social support may mean visiting GP more often 	<ul style="list-style-type: none"> - trying to fit everything that may be needed for an older adult into 10 minutes is impossible ↳ complexity
<p>Focus Group 2</p> <ul style="list-style-type: none"> - Edward - Robert - Ajay - Amina - Omar 	<ul style="list-style-type: none"> - do not rely only on chronological age ↳ comorbidities, polypharmacy all contribute to 'old' - the age at which a person is considered 'old' varies by socioeconomic status 	<ul style="list-style-type: none"> - comorbidities, polypharmacy - more likely to send older adults for imaging ↳ degeneration more likely 	<ul style="list-style-type: none"> - family have unrealistic expectations of what can be done - relatives who are GPs/knowledgeable can put pressure on GPs to provide a solution - link to socioeconomic status ↳ well educated = pushy - reluctance to deal with family - older adults take their time more in consultations, social aspect → want to have a chat ↳ then difficult to discuss lifestyle change in time 	<ul style="list-style-type: none"> - access to care can be a barrier for older adults ↳ services only available in cities not locally - use of private services eg physio, osteopathy etc by older adults - pharmacists prescribing - pressure to deal with this is osteopathy hasn't helped - personalised exercise programmes would be best choice, but no resources ↳ no surgery options to refer to - lifestyle interventions ideal
<p>Focus Group 3</p> <ul style="list-style-type: none"> - Callum - Becky 	<ul style="list-style-type: none"> - older adults are diverse in physical fitness/abilities ↳ some still run marathons - generational differences, particularly for the oldest-old 	<ul style="list-style-type: none"> - obesity → related to joints ↳ encouraging patients to lose weight - polypharmacy - if they live alone, older adults who are struggling to function may be struggling to survive 	<ul style="list-style-type: none"> - relatives might prompt older adults to talk about certain factors - older adults living alone might be happy to chat regardless of whether their pain is better ↳ especially with physio where one appointment can be so hard - social situation is more important for older than younger adults, more likely to talk about older adults 	<ul style="list-style-type: none"> - GP responsibility for patient lifestyle choices - role of primary care for MSK pain ↳ primary care often seen as a stepping stone

Appendix 10: PPIE coding/noting activity

PPIE – 10th April 2019

Extract	Thoughts / Notes
<p>Erin: Yes. Now two things here. When I went to the GP, and the car park isn't that far from the surgery, but it was a strain walking that short distance. Now when I walked out of that GP's room my back felt better because he was so positive, yeah? He's such a lovely person I walked out of there with what I was telling myself something is going to be done. There's hope! I walked out of there feeling better, I did. My back felt better walking out of there than it had walking in there because of his positive attitude that this was going to happen, yeah, I walked out of there with something's gonna be done. Yeah.</p>	<p>Good example of how being listened to can lift ones mood, + give a person confidence.</p> <p>Expectations were very low (probably because previous GP visits have been negative)</p> <p>Also a good example of positive mood helping</p>

to reduce the pain as well as mental depression or anxiety.

Extract	Thoughts / Notes
<p>Karen: ...my own doctor's on maternity leave and this is just a locum, and she was very stern and straight-faced and wasn't a bit sympathetic and, there was no, my doctor's a lovely, a lovely girl, an Indian lady and we've got some, and you build a bit of rapport with your doctor. I don't go very often only now and again but it was strange telling a stranger who just shoved a box of paper hankies, didn't seem very sympathetic and just referred me off for an X-ray. And I haven't seen a GP since because when the results of the X-ray came through I had another locum do a telephone consultation, oh and no, and then I did see yet a third doctor on, yes I did, he called me in to get the results of my scan and then sent me off the physio for a special, the physio that could do the needle in it.</p>	<p>No Reg GP! <u>A Locum</u> Seem NOT DOCTOR WHO SHE WAS ALWAYS SEEN BY.</p>

Appendix 11: KAPS baseline questionnaire

Workpackage 1 Keele Aches and Pains Study (KAPS questionnaires)

KAPS Baseline questionnaire



**Keele
Aches &
Pains
Study**

Questionnaire

The Keele Aches and Pains Study is funded by the
Programme Grants for Applied Research Programme

NHS
*National Institute for
Health Research*

Please can you answer **all** the questions, even if you feel that they do not apply to you. Questions are arranged in sections asking about your aches, pain or stiffness (**your pain condition**), your feelings about pain, your general health, and general questions about you. Some questions may look like others, but they tell us different things, so please fill them in anyway. Please take the time to read and answer each question carefully. Most of the questions can be answered by putting a **cross** in a box next to or under your answer. For example, if you wish to answer 'Not at all', **cross** the box like this:

Yes..... ☒ No..... ☐

No pain

Pain as bad as could be

0 1 2 3 4 5 6 7 8 9 10

X

Not at all confident	Completely confident
1	5
2	4
3	3
4	2
5	1

0	1	2	3	4	5	6 ✓
---	---	---	---	---	---	-----

Now please continue and fill in this questionnaire

Section A

The following questions are about the aches, pain or stiffness **you visited your doctor or nurse about in the last week or so.**

1) When you recently visited your GP practice, **which part of your body** did you consult about? *(Please cross one box)*

Neck..... <input type="checkbox"/>	Back..... <input type="checkbox"/>
Shoulder..... <input type="checkbox"/>	Knee..... <input type="checkbox"/>
Pain in more than one part of the body..... <input type="checkbox"/>	

Thinking about the pain condition you answered above...

2) How would you rate your pain on a 0-10 scale **at the present time**, that is **right now**, where 0 is 'no pain' and 10 is 'pain as bad as could be'?

(Please cross one box)

No pain										Pain as bad as could be
0	1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3) Overall, **how bothersome has your pain been** in the **last 2 weeks**?
(Please cross one box)

Not at all	Slightly	Moderately	Very much	Extremely
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4) Are you currently taking prescribed or "over the counter" medication (e.g. pain killers, anti-inflammatory drugs, creams, sprays) to help your pain condition?

Yes..... ☐ No..... ☐

5) Please think about your pain condition over the **last 2 weeks**, as you answer these questions. *(Please cross one box on each row)*

	Yes	No
a) In the last 2 weeks, have you had pain in more than one part of your body?	<input type="checkbox"/>	<input type="checkbox"/>
b) In the last 2 weeks, have you only been able to walk short distances because of your pain?	<input type="checkbox"/>	<input type="checkbox"/>
c) In the last 2 weeks, have you had to dress more slowly than usual because of your pain?	<input type="checkbox"/>	<input type="checkbox"/>
d) In the last 2 weeks, has your most painful area been in your arm (hand, wrist, elbow or shoulder)?	<input type="checkbox"/>	<input type="checkbox"/>
e) Do you feel it is unsafe for a person with a condition like yours to be physically active?	<input type="checkbox"/>	<input type="checkbox"/>
f) Have you had worrying thoughts about your pain a lot of the time in the last 2 weeks?	<input type="checkbox"/>	<input type="checkbox"/>
g) Do you feel that your pain is terrible and it's never going to get any better? <i>(yes to both)</i>	<input type="checkbox"/>	<input type="checkbox"/>
h) In the last 2 weeks, have you stopped enjoying all the things you usually enjoy because of your pain?	<input type="checkbox"/>	<input type="checkbox"/>
i) Have you felt worn out or lacking in energy in the last 2 weeks?	<input type="checkbox"/>	<input type="checkbox"/>
j) Has your pain made you feel down or depressed in the last 2 weeks?	<input type="checkbox"/>	<input type="checkbox"/>
k) In the last 2 weeks have you been bothered a lot by your pain?	<input type="checkbox"/>	<input type="checkbox"/>
l) Do you have any other important health problems?	<input type="checkbox"/>	<input type="checkbox"/>

6) Please think about your pain condition over the **last 2 weeks**, as you answer the following questions. *(Please cross one box on each row)*

	Yes	No
a) Has your pain interfered a lot with your daily activities in the last 2 weeks?	<input type="checkbox"/>	<input type="checkbox"/>
b) In the last 2 weeks, has your pain stopped you from leading a normal life?	<input type="checkbox"/>	<input type="checkbox"/>
c) Do you often feel unsure about how to manage your pain condition?	<input type="checkbox"/>	<input type="checkbox"/>
d) Do you think your pain condition will last a long time?	<input type="checkbox"/>	<input type="checkbox"/>
e) In the last 2 weeks, have you had trouble falling asleep because of your pain?	<input type="checkbox"/>	<input type="checkbox"/>
f) Do you feel your pain is never going to get any better?	<input type="checkbox"/>	<input type="checkbox"/>
g) Have you ever had treatment for this pain condition that did not help?	<input type="checkbox"/>	<input type="checkbox"/>
h) Do you feel that there is nothing you or anyone else can do to help your pain condition?	<input type="checkbox"/>	<input type="checkbox"/>
i) In the last 2 weeks have you had troublesome joint or muscle pain in more than one part of your body?	<input type="checkbox"/>	<input type="checkbox"/>
j) Does your pain stop you from reaching most of your goals in life?	<input type="checkbox"/>	<input type="checkbox"/>
k) Do you often feel unable to cope with your pain?	<input type="checkbox"/>	<input type="checkbox"/>
l) Do you feel you might hurt or harm yourself if you are physically active?	<input type="checkbox"/>	<input type="checkbox"/>
m) Has your pain had a bad or negative effect on any of your close relationships?	<input type="checkbox"/>	<input type="checkbox"/>
n) Do you feel your pain is terrible?	<input type="checkbox"/>	<input type="checkbox"/>
o) Have you had trouble staying asleep because of your pain in the last 2 weeks?	<input type="checkbox"/>	<input type="checkbox"/>

- 7) In the **last 2 weeks**, on **average**, how intense was your **usual** pain rated on a 0-10 scale, where 0 is 'no pain' and 10 is 'pain as bad as could be'?

(Please cross one box)

No pain										Pain as bad as could be
0	1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 8) In the **last 2 weeks**, how intense was your **least** painful pain rated on a 0-10 scale where 0 is 'no pain' and 10 is 'pain as bad as could be'?

(Please cross one box)

No pain										Pain as bad as could be
0	1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The following two questions describe some things that other people have told us about their pain. For each statement, *cross one box* next to the number from 0 to 10 to say how much you agree or disagree.

- 9) An increase in pain is an indication that I should stop what I'm doing until the pain decreases.

Completely disagree										Completely agree
0	1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 10) I should not do my normal work with my present pain ("Work" includes paid, unpaid and housework).

Completely disagree										Completely agree
0	1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>


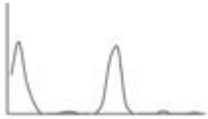
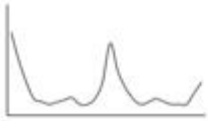


11) How long is it since you had a **whole month without** any pain?

(You do not need to be exact, please cross the box nearest to your answer)

Less than 3 months	3 to 6 months	7 to 12 months	1 to 2 years	3 to 5 years	6 to 10 years	Over 10 years
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12) Below are some pictures and descriptions of how some peoples' pain can change over time. Please look at these and please **cross one box** next to the option that you think comes closest to how your pain condition has been **over the last year**.

(Please cross one box only)

- a)  A single episode with no other major episodes of pain ☐
- b)  A few episodes of pain, with mostly pain-free periods in between ☐
- c)  Some pain most of the time, and a few episodes of severe pain ☐
- d)  Pain that goes up and down all the time, with episodes of severe pain ☐
- e)  Severe pain all or nearly all of the time ☐

13) For these questions, please think about your pain condition over the last 7 days. *(Please cross one box for each question).*

a) How much did this pain interfere with your enjoyment of life?

Not at all	A little bit	Somewhat	Quite a bit	Very much
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

b) How much did this pain interfere with your ability to concentrate?

Not at all	A little bit	Somewhat	Quite a bit	Very much
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

c) How much did this pain interfere with your day to day activities?

Not at all	A little bit	Somewhat	Quite a bit	Very much
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

d) How much did this pain interfere with doing tasks away from home (e.g. getting groceries, running errands)?

Not at all	A little bit	Somewhat	Quite a bit	Very much
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

e) How much did this pain interfere with your enjoyment of recreational activities?

Not at all	A little bit	Somewhat	Quite a bit	Very much
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

f) How often did this pain keep you from socialising with others?

Never	Rarely	Sometimes	Often	Always
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14) How long have you had your current pain problem?

(Please cross one box)

0 to 1 week	1 to 2 weeks	3 to 4 weeks	4 to 5 weeks	6 to 8 weeks
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9 to 11 weeks	3 to 6 months	6 to 9 months	9 to 12 months	Over 1 year
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15) How would you rate the pain you have had during the **past week**?

(Please cross one box)

No pain										Pain as bad as could be
0	1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16) Please cross the box next to the number that best describes your current ability to participate in each of these activities:

a) I can do light work for an hour. *(Please cross one box)*

Can't do it because of pain problem							Can do it without pain being a problem			
0	1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

b) I can sleep at night. *(Please cross one box)*

Can't do it because of pain problem							Can do it without pain being a problem			
0	1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please cross one box for each of the following questions.

17) How tense or anxious have you felt in the past week?

Absolutely calm and relaxed							As tense and anxious as I have ever been			
0	1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18) How much have you been bothered by feeling depressed?

Not at all									Extremely	
0	1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

19) In your view, how large is the risk that your current pain may become persistent?

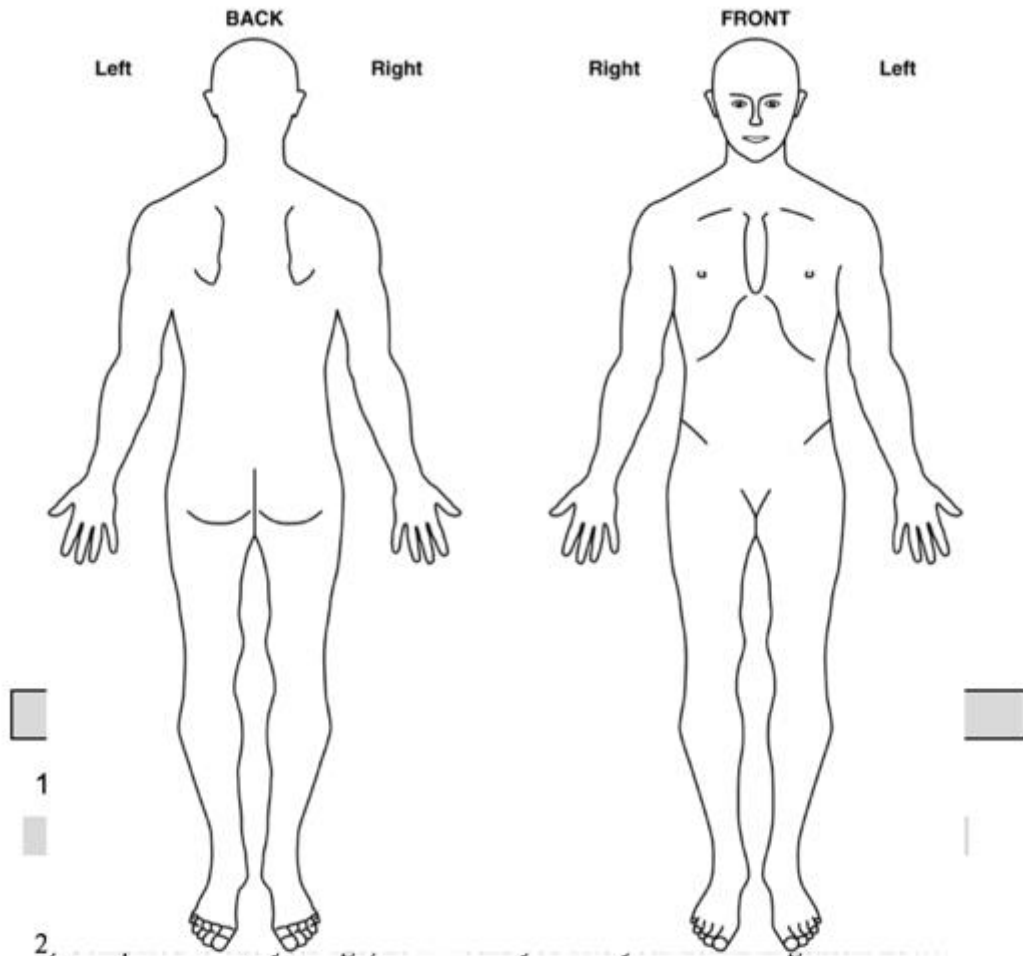
No risk									Very large risk	
0	1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20) In your estimation, what are the chances you will be working your normal duties in 3 months? "Work" includes paid, unpaid and housework.

No chance									Very large chance	
0	1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section B

1) This question is about **any** aches, pain or stiffness you may have in your body. Please *shade in the picture* below to show the areas in your body where you feel aches, pain or stiffness in the **past 4 weeks**. Please **do not** include pain that is due to feverish illnesses such as flu or period pain.



2,
(Please cross one box)

Much better now than one year ago	Somewhat better now than one year ago	About the same as one year ago	Somewhat worse now than one year ago	Much worse now than one year ago
---	--	--------------------------------------	---	--

☐
☐
☐
☐
☐

3) The following questions are about activities you might do during a typical day. Does **your health now limit you** in these activities? If so, how much?

(Please cross one box on each line)

	Yes, limited a lot	Yes, limited a little	No, not limited at all
a) Vigorous activities , such as running, lifting heavy objects, participating in strenuous sports.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Moderate activities , such as moving a table, pushing a vacuum cleaner, bowling, playing golf.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Lifting or carrying groceries.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Climbing several flights of stairs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Climbing one flight of stairs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Bending, kneeling or stooping.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Walking more than a mile .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Walking several hundred yards .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Walking one hundred yards .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Bathing or dressing yourself.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4) During the **past four weeks**, how much of the time have you had any of the following problems with your work or other regular daily activities **as a result of your physical health**?

(Please cross one box on each line)

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a) Cut down on the amount of time you spent on work or other activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Accomplished less than you would like	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

c) Were limited in the kind of work or other activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Had difficulty performing the work or other activities (for example, it took extra effort)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5) During the **past four weeks**, how much of the time have you had any of the following problems with your work or other regular daily activities **as a result of any emotional problems** (such as feeling depressed or anxious)?

(Please cross one box on each line)

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a) Cut down on the amount of time you spent on work or other activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Accomplished less than you would like	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Did work or other activities less carefully than usual	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please cross one box for each of the following questions.

6) During the **past four weeks**, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbours, or groups?

Not at all	Slightly	Moderately	Quite a bit	Extremely
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7) How much **bodily** pain have you had during the **past four weeks**?

None	Very mild	Mild	Moderate	Severe	Very severe
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8) During the past **four weeks**, how much did **pain** interfere with your normal work (including both work outside the home and housework)?

Not at all	A little bit	Moderately	Quite a bit	Extremely
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9) During the **past four weeks**, how much of the time has your **physical health or emotional problems** interfered with your social activities (like visiting with friends, relatives, etc.)?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10) These questions are about how you feel and how things have been with you **during the past four weeks**. For each question, please give the one answer that comes closest to the way you have been feeling.

(Please cross one box on each line)

How much time during the past four weeks...	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a) Did you feel full of life?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have you been very nervous?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Have you felt so down in the dumps that nothing could cheer you up?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Have you felt calm and peaceful?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Did you have a lot of energy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Have you felt downhearted and depressed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Did you feel worn out?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Have you been happy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Did you feel tired?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11) How TRUE or FALSE is **each** of the following statements for you?

(Please cross one box on each line)

	Definitely true	Mostly true	Don't know	Mostly false	Definitely false
a) I seem to get sick a little easier than other people	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) I am as healthy as anybody I know	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) I expect my health to get worse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) My health is excellent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12) This question is about your **sleep patterns** over the **last four weeks**.

(Please cross one box on each line)

Over the last four weeks did you...	Not at all	On some nights	On most nights
a) Have trouble falling asleep?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Wake up several times in the night?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Have trouble staying asleep?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Wake up after your usual sleep feeling tired and worn out?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13) What long term medical conditions do you have?

(Please cross all boxes that apply)

Diabetes	<input type="checkbox"/>
Breathing problems / Chronic Pulmonary Obstructive Disease (COPD)/ Asthma	<input type="checkbox"/>
Heart problems or high blood pressure	<input type="checkbox"/>
Chronic fatigue syndrome, ME or fibromyalgia	<input type="checkbox"/>
Anxiety, depression, stress	<input type="checkbox"/>
Other (Please give details).....	<input type="checkbox"/>
.....	

14) In the last week, on how many days did you do vigorous physical activities?

None	1 day	2 days	3 days	4 days	5 days or more
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15) How often do you need to have someone help you when you read instructions on pamphlets, or other written material from your doctor or pharmacy?
(Please cross one box)

Never	Rarely	Sometimes	Often	Always
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16) For each of the five sets of statements that follow, please cross the one box that best describes your own health state today.

Mobility	
I have no problems walking about.....	<input type="checkbox"/>
I have slight problems walking about.....	<input type="checkbox"/>
I have moderate problems walking about.....	<input type="checkbox"/>
I have severe problems walking about.....	<input type="checkbox"/>
I am unable to walk about.....	<input type="checkbox"/>

Self-Care

- I have no problems washing or dressing myself..... ☐
- I have slight problems washing or dressing myself..... ☐
- I have moderate problems washing or dressing myself..... ☐
- I have severe problems washing or dressing myself..... ☐
- I am unable to wash or dress myself..... ☐

Usual activities (e.g. work, study, housework, family or leisure activities).

- I have no problems doing my usual activities..... ☐
- I have slight problems doing my usual activities..... ☐
- I have moderate problems doing my usual activities..... ☐
- I have severe problems doing my usual activities..... ☐
- I am unable to do my usual activities..... ☐

Pain / Discomfort

- I have no pain or discomfort..... ☐
- I have slight pain or discomfort..... ☐
- I have moderate pain or discomfort..... ☐
- I have severe pain or discomfort..... ☐
- I have extreme pain or discomfort..... ☐

Anxiety / Depression

- I am not anxious or depressed..... ☐
- I am slightly anxious or depressed..... ☐
- I am moderately anxious or depressed..... ☐
- I am severely anxious or depressed..... ☐
- I am extremely anxious or depressed..... ☐

Section D

1) Please rate how **confident** you are that you can do the following things **at present, despite the pain**. To indicate your answer cross the box below **one** of the numbers on the scale for each item, where **0** = not at all confident and **6** = completely confident. Remember, these questions are **not** asking whether or not you have been doing these things, but rather **how confident you are that you can do them at present, despite the pain**.

		<i>Not at all</i> <i>confident</i>	0	1	2	3	<i>Completely</i> <i>confident</i>	4	5	6
a) I can enjoy things, despite the pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) I can do most of the household chores (e.g. tidying-up, washing dishes, etc.), despite the pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) I can socialise with my friends or family members as often as I used to do, despite the pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) I can cope with my pain in most situations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) I can do some form of work, despite the pain. ("Work" includes housework, paid and unpaid)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) I can still do many of the things I enjoy doing, such as hobbies or leisure activity, despite the pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) I can cope with my pain without medication	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) I can still accomplish most of my goals in life, despite the pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) I can live a normal lifestyle, despite the pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) I can gradually become more active, despite the pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2) The following list contains sentences that people have used to describe themselves and their views **when they feel pain**. When you read each sentence indicate how often you think in a similar way. For example scoring a

0 would mean you **never** think that way whereas scoring a 6 would mean you would **always** think that way or scoring a 3 would mean you **sometimes** think that way. Remember you may choose any number that fits **how you feel**.

(Please cross the box that applies to you for each of the following statements)

When I feel pain...	Never 0	1	Sometimes 2	3	4	Always 5	6
a) It's terrible and I feel it's never going to get any better	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) I feel my life isn't worth living	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) It's awful and I feel that it overwhelms me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) I feel like I can't go on	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) I worry all the time about whether it will end	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) I feel I can't stand it anymore	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3) Below are a set of questions about how people think about their pain.

Please indicate how much **you agree or disagree** with the following statements about your pain condition (aches, pain or stiffness) by **putting a cross in one box** for each question. (Think about yourself over the last **two weeks**.)

(Please cross the box that applies to you for each statement)

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
a) I get depressed when I think about my pain condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) My pain condition will last a long time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) I have the power to influence my pain condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) The course of my pain condition depends on me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Little can be done to improve my pain condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section E

If the pain condition you recently went to your GP practice about is **back pain**, please answer this question, otherwise go to Section F on the next page.

1) Thinking about the **last 2 weeks**, please cross one box on each row in response to the following questions:

	Yes	No		
a) Has your back pain spread down your leg(s) at some time in the last 2 weeks?	<input type="checkbox"/>	<input type="checkbox"/>		
b) Have you had pain in the shoulder or neck at some time in the last 2 weeks?	<input type="checkbox"/>	<input type="checkbox"/>		
c) Have you only walked short distances because of your back pain?	<input type="checkbox"/>	<input type="checkbox"/>		
d) In the last 2 weeks, have you dressed more slowly than usual because of back pain?	<input type="checkbox"/>	<input type="checkbox"/>		
e) Do you think that it's not really safe for a person with a condition like yours to be physically active?	<input type="checkbox"/>	<input type="checkbox"/>		
f) Have worrying thoughts been going through your mind a lot of the time?	<input type="checkbox"/>	<input type="checkbox"/>		
g) Do you feel that your back pain is terrible and it's never going to get any better?	<input type="checkbox"/>	<input type="checkbox"/>		
h) In general have you stopped enjoying all the things you usually enjoy?	<input type="checkbox"/>	<input type="checkbox"/>		
i) Overall, how bothersome has your back pain been in the last 2 weeks? (Please cross one box)				
Not at all	Slightly	Moderately	Very much	Extremely
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section F

1) Are you: *Female* ☐ *Male* ☐

2) What is your **date of birth**?

<i>day</i>

<i>month</i>

 1 9

<i>year</i>

3) Do you currently live alone? (*Please cross one box*)

Yes..... ☐ No..... ☐

4) Can you count on anyone to provide you with **emotional support** (e.g. talking over problems to help you with a difficult decision)?

(*Please cross one box*)

Yes..... ☐ No..... ☐ No need.... ☐

5) When you need some extra help, can you count on anyone to help with **daily tasks** (e.g. grocery shopping, house cleaning, cooking, telephoning, drive you somewhere)?

(*Please cross one box*)

Yes..... ☐ No..... ☐ No need... ☐

6) How old were you when you left school?

 years old

7) Did you go into full-time education (College or university)?

Yes... ☐ No... ☐

If yes, what age did you finish full-time education?

 years old

8) Have you gained qualifications through study as an adult?

Yes... ☐ No... ☐

9) What is your current or most recent paid **job title**?

.....

.....

.....

.....

10) Which of the following best describes your **current** situation? *(Please cross one box)*

Working full-time in a paid job.....	<input type="checkbox"/>	}	<i>Please continue with question 11</i>
Working part-time in a paid job.....	<input type="checkbox"/>		
Employed but currently off sick.....	<input type="checkbox"/>		
<hr/>			
Housewife/husband	<input type="checkbox"/>		
Unemployed due to pain.....	<input type="checkbox"/>		
Unemployed for other health reasons...	<input type="checkbox"/>		
Retired.....	<input type="checkbox"/>		<i>Please move on to section G</i>
Student.....	<input type="checkbox"/>		
Other <i>(please specify)</i>	<input type="checkbox"/>		
.....			
.....			

11) How **satisfied** are you with your **employment**? *(Please cross one box)*

Very satisfied	Satisfied	Slightly dissatisfied	Severely dissatisfied
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12) Have you **taken time off work** during the **last 6 months** because of your pain condition? (*Please cross **one** box*)

Yes..... ☐ Please answer the question below to give us some details

No..... ☐ Please go to **question 13**

If yes, please write in the **number** of days, weeks or months you were absent from work due to your pain condition in the **last 6 months**

☐ Days

☐ Weeks

☐ Months

(*Please only enter a
number in **one** of these
boxes.*)

13) Are you **currently**... (*Please cross **one** box*)

Doing your usual job..... ☐ *Please continue to **section G***

Doing lighter / different duties... ☐

Working fewer hours..... ☐

On paid sick leave..... ☐

On unpaid leave..... ☐

*Please continue
with **question 14**
below*

14) If you are not doing your usual job, is this because of your pain condition?

(*Please cross one box*)

Yes.... ☐ No... ☐

SECTION G

Thank you for completing this questionnaire. Please make sure you have answered all the questions.

Please ensure that you have read the enclosed Participant Information Sheet that explains information about the study.

By completing and returning this questionnaire:

- You confirm that you have read and understood the Participant Information Sheet and are willing to take part in the study.
- You are happy to receive questionnaires in 2 months and 6 months.
- You understand that you can withdraw from the study at any time, and that this will not affect the care you receive in any way.

Further Consent

*Please answer each statement by putting a cross in **one** box on each line*

	YES	NO
I give my permission for my medical records to be reviewed.....	<input type="checkbox"/>	<input type="checkbox"/>
I am happy to be contacted about other parts of this research.....	<input type="checkbox"/>	<input type="checkbox"/>

Even if you would prefer us not to review your medical records or contact you about other parts of this research, **the answers you have given in this questionnaire will still be very important to us.**

Now please fill in the date **you completed this questionnaire:**

Day	Month	Year
<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

Please turn over

Contact details

Please enter your details below.

Name: _____

Address: _____

Post code: _____

Telephone number.....

Mobile number.....

Email address.....

For the questionnaires at 2 months and 6 months, we use a reminder system to let you know when you are going to receive the questionnaire, and a reminder to send it back to us. Usually we send these reminders by post or sometimes by telephone. However, if you would **like these reminders in a different way** (e.g. text message or email) please fill in the section below.

I would like to be reminded by...

Please tick
one box

Email.....

☐

Text message.....

☐

Thank you for your help with this research project.

Please return your questionnaire in the FREEPOST (no stamp needed) envelope provided.

This page will be detached and stored separately from the questionnaire.

Study ID Number

Appendix 12: KAPS six-month questionnaire

The Keele Aches and Pains Study is funded by the
Programme Grants for Applied Research



NHS
*National Institute for
Health Research*

**Keele
Aches &
Pains
Study**

Questionnaire Follow-up at 6 months

INSTRUCTIONS FOR THIS QUESTIONNAIRE

Please can you answer **all** the questions, even if you feel that they do not apply to you. Questions are arranged in sections asking about your aches, pain or stiffness (your pain condition), your feelings about pain, your general health, and general questions about you. Some questions may look like others, but they tell us different things, so please fill them in anyway. Please take the time to read and answer each question carefully. Most of the questions can be answered by putting a **cross** in a box next to or under your answer. For example, if you wish to answer 'Not at all', **cross** the box like this:

Not at all	Slightly	Moderately	Very much	Extremely
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Or indicating Yes or No, again place a **cross** in the box next to your answer

Yes..... <input checked="" type="checkbox"/>	No..... <input type="checkbox"/>
--	----------------------------------

Here is another example: how to answer a question if you **don't** have any pain:

No pain											Pain as bad as could be
0	1	2	3	4	5	6	7	8	9	10	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Here is an example of how to answer a question if you are **completely confident**:

Not at all confident						Completely confident
0	1	2	3	4	5	6
						<input checked="" type="checkbox"/>

Now please continue and fill in this questionnaire

Section A

The following questions are about the aches, pain or stiffness you visited your doctor or nurse with approximately **six months ago** (we will refer to this as your "**pain condition**"). According to our records from your response to the first questionnaire **your pain condition was in...**

Affix sticker here

1) Compared with when you saw your doctor or nurse with this pain condition six months ago, how do you feel your **pain is now**?

Completely recovered	Much better	Better	No change	Worse	Much worse
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2) Thinking now about your pain condition, please cross one box for each of these questions. In the past 7 days...

a) How much did this pain interfere with your enjoyment of life?

Not at all	A little bit	Somewhat	Quite a bit	Very much
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

b) How much did this pain interfere with your ability to concentrate?

Not at all	A little bit	Somewhat	Quite a bit	Very much
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please continue on the next page

Still thinking about the same **pain condition** that you visited your GP or nurse about **six months ago**

2) In the past 7 days... *(Please cross one box for each question)*

c) How much did this pain interfere with your day to day activities?

Not at all	A little bit	Somewhat	Quite a bit	Very much
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

d) How much did this pain interfere with doing tasks away from home (e.g. getting groceries, running errands)?

Not at all	A little bit	Somewhat	Quite a bit	Very much
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

e) How much did this pain interfere with your enjoyment of recreational activities?

Not at all	A little bit	Somewhat	Quite a bit	Very much
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

f) How often did this pain keep you from socialising with others?

Never	Rarely	Sometimes	Often	Always
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3) How would you rate your pain on a 0-10 scale **at the present time**, that is **right now**, where 0 is 'no pain' and 10 is 'pain as bad as could be'?

(Please cross one box)

No pain									Pain as bad as could be	
0	1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4) In the **last 2 weeks**, on **average**, how intense was your **usual** pain rated on a 0-10 scale, where 0 is 'no pain' and 10 is 'pain as bad as could be'?

(Please cross one box)

No pain									Pain as bad as could be	
0	1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5) In the **last 2 weeks**, how intense was your **least** painful pain rated on a 0-10 scale where 0 is 'no pain' and 10 is 'pain as bad as could be'?

(Please cross one box)

No pain										Pain as bad as could be
0	1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6) Overall, **how bothersome has your pain been** in the **last 2 weeks**?
(Please cross one box)

Not at all	Slightly	Moderately	Very much	Extremely
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7) Please think about your pain condition over the **last 2 weeks**, as you answer the following questions. (Please cross one box on each row)

	Yes	No
a) In the last 2 weeks, have you had pain in more than one part of your body?	<input type="checkbox"/>	<input type="checkbox"/>
b) In the last 2 weeks, have you only been able to walk short distances because of your pain?	<input type="checkbox"/>	<input type="checkbox"/>
c) In the last 2 weeks, have you had to dress more slowly than usual because of your pain?	<input type="checkbox"/>	<input type="checkbox"/>
d) In the last 2 weeks, has your most painful area been in your arm (hand, wrist, elbow or shoulder)?	<input type="checkbox"/>	<input type="checkbox"/>
e) Do you feel it is unsafe for a person with a condition like yours to be physically active?	<input type="checkbox"/>	<input type="checkbox"/>
f) Have you had worrying thoughts about your pain a lot of the time in the last 2 weeks?	<input type="checkbox"/>	<input type="checkbox"/>
g) Do you feel that your pain is terrible and it's never going to get any better? (yes to both)	<input type="checkbox"/>	<input type="checkbox"/>
h) In the last 2 weeks, have you stopped enjoying all the things you usually enjoy because of your pain?	<input type="checkbox"/>	<input type="checkbox"/>

i) Have you felt worn out or lacking in energy in the last 2 weeks?	<input type="checkbox"/>	<input type="checkbox"/>
j) Has your pain made you feel down or depressed in the last 2 weeks?	<input type="checkbox"/>	<input type="checkbox"/>
k) In the last 2 weeks have you been bothered a lot by your pain?	<input type="checkbox"/>	<input type="checkbox"/>
l) Do you have any other important health problems?	<input type="checkbox"/>	<input type="checkbox"/>

8) Please think about your pain condition over the **last 2 weeks** as you answer the following questions. *(Please cross one box on each row)*

	Yes	No
a) Has your pain interfered a lot with your daily activities in the last 2 weeks?	<input type="checkbox"/>	<input type="checkbox"/>
b) In the last 2 weeks, has your pain stopped you from leading a normal life?	<input type="checkbox"/>	<input type="checkbox"/>
c) Do you often feel unsure about how to manage your pain condition?	<input type="checkbox"/>	<input type="checkbox"/>
d) Do you think your pain condition will last a long time?	<input type="checkbox"/>	<input type="checkbox"/>
e) In the last 2 weeks, have you had trouble falling asleep because of your pain?	<input type="checkbox"/>	<input type="checkbox"/>
f) Do you feel your pain is never going to get any better?	<input type="checkbox"/>	<input type="checkbox"/>
g) Have you ever had treatment for this pain condition that did not help?	<input type="checkbox"/>	<input type="checkbox"/>
h) Do you feel that there is nothing you or anyone else can do to help your pain condition?	<input type="checkbox"/>	<input type="checkbox"/>
i) In the last 2 weeks have you had troublesome joint or muscle pain in more than one part of your body?	<input type="checkbox"/>	<input type="checkbox"/>

j) Does your pain stop you from reaching most of your goals in life?	<input type="checkbox"/>	<input type="checkbox"/>
k) Do you often feel unable to cope with your pain?	<input type="checkbox"/>	<input type="checkbox"/>
l) Do you feel you might hurt or harm yourself if you are physically active?	<input type="checkbox"/>	<input type="checkbox"/>
m) Has your pain had a bad or negative effect on any of your close relationships?	<input type="checkbox"/>	<input type="checkbox"/>
n) Do you feel your pain is terrible?	<input type="checkbox"/>	<input type="checkbox"/>
o) Have you had trouble staying asleep because of your pain in the last 2 weeks?	<input type="checkbox"/>	<input type="checkbox"/>

Section B

The following questions are about the health professionals you have seen and treatments you have received for your **pain condition** (aches, pain or stiffness) in the **last 6 months**.

1) Please write in the table below the **number of times** you have seen each type of health professional in the **last 6 months for your pain condition**. Indicate whether you have seen them at home or at their practice.

Health care professional	Home	Practice
e.g. General practice nurse	1	3
Doctor (GP)		
Practice/District Nurse		

Other (please specify).....

Other (please specify).....

Other (please specify).....

Other (please specify).....

Other (please specify).....

2) During the **last 6 months**, have you **been to see** any other health care professionals for your pain condition, either in an **NHS service** or **private care**? Further treatments or investigations (e.g. x-rays, surgery) are covered in question 3 on the next page.

Yes..... ☐

Please complete the table below.

No..... ☐

*Please turn to **question 3** on the next page.*

Please write in the **number of times** you have seen each health care professional in the **last 6 months for your pain condition**.

Health care professional	NHS	Private
e.g. Physiotherapist	0	3

Consultant/ specialist/ hospital doctor (outpatient clinic)

Physiotherapist

Acupuncturist

Osteopath

Other (please specify).....

Other (please specify).....

Other (please specify).....

Other (please specify).....

Other (please specify).....

3) In the **last 6 months**, have you attended an **NHS or private hospital** for any investigations or treatments (e.g. x-ray, MRI scan, surgery, epidural injection) related to **your pain condition**? Please **do not** include any initial appointments reported in question 1 of this section.

Yes..... ☐ Please complete the table below to give us some details.

No..... ☐ Please proceed to **question 4**.

Treatment or investigation	Reason for attendance	Number of investigations or treatments in NHS	Number of investigations or treatments in private practice
<i>e.g. x-ray</i>	<i>Knee pain</i>	<i>1</i>	<i>0</i>

4) In the **last 6 months**, have you **stayed overnight** as an inpatient in an **NHS or private hospital** for your pain condition?

Yes..... ☐ Please complete the table below to give us some details.

No..... ☐ Please turn to **question 5** on the next page.

Reason for inpatient stay	Number of days in NHS hospital	Number of days in private hospital
<i>e.g. hip joint replacement</i>	<i>6</i>	<i>0</i>

5) In the **last 6 months**, have you personally bought any **over-the-counter medicines** (items that you buy from the chemist / supermarket), **treatments** or **appliances** to help your pain condition?

These can include painkillers, anti-inflammatory drugs / creams / sprays, massage oils, TENS machine, corsets etc, as well as any herbal or complementary remedies.

Yes..... ☐

Please complete the table below to give us some details.

No..... ☐

*Please move on to **section C** on the next page.*

Medicine /Treatment /Appliance	Cost (£)
<i>e.g. paracetamol</i>	<i>56p</i>

Section C

1) Please rate how **confident** you are that you can do the following things **at present, despite the pain**. To indicate your answer cross the box below **one** of the numbers on the scale for each item, where **0** = not at all confident and **6** = completely confident. Remember, these questions are **not** asking whether or not you have been doing these things, but rather **how confident you are that you can do them at present, despite the pain**.

	Not at all confident	0	1	2	3	4	5	Completely confident	6
a) I can enjoy things, despite the pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) I can do most of the household chores (e.g. tidying-up, washing dishes, etc.), despite the pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) I can socialise with my friends or family members as often as I used to do, despite the pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) I can cope with my pain in most situations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) I can do some form of work, despite the pain. ("Work" includes housework, paid and unpaid)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) I can still do many of the things I enjoy doing, such as hobbies or leisure activity, despite the pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) I can cope with my pain without medication	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) I can still accomplish most of my goals in life, despite the pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) I can live a normal lifestyle, despite the pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) I can gradually become more active, despite the pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2) The following list contains sentences that people have used to describe themselves and their views **when they feel pain**. When you read each sentence, indicate how often you think in a similar way. For example scoring a 0 would mean you **never** think that way whereas scoring a 6 would mean you would **always** think that way or scoring a 3 would mean you **sometimes** think that way. Remember you may choose any number that fits how you feel.

(Please cross the box that applies to you for each statement)

When I feel pain...	Never		Sometimes			Always	
	0	1	2	3	4	5	6
a) It's terrible and I feel it's never going to get any better	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) I feel my life isn't worth living	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) It's awful and I feel that it overwhelms me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) I feel like I can't go on	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) I worry all the time about whether it will end	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) I feel I can't stand it anymore	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3) Below are a set of questions about how people think about their pain. Please indicate how much **you agree or disagree** with the following statements about your pain condition (aches, pain or stiffness) by **putting a cross in one box** for each question. (Think about yourself over the last **two weeks**.)

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
a) I get depressed when I think about my pain condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) My pain condition will last a long time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) I have the power to influence my pain condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) The course of my pain condition depends on me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Little can be done to improve my pain condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section D

1) For each of the five sets of statements that follow, please cross the one box that best describes your own health state today.

Mobility

- I have no problems walking about..... ☐
- I have slight problems walking about..... ☐
- I have moderate problems walking about..... ☐
- I have severe problems walking about..... ☐
- I am unable to walk about..... ☐

Self-Care

- I have no problems washing or dressing myself..... ☐
- I have slight problems washing or dressing myself..... ☐
- I have moderate problems washing or dressing myself..... ☐
- I have severe problems washing or dressing myself..... ☐
- I am unable to wash or dress myself..... ☐

Usual activities (e.g. work, study, housework, family or leisure activities).

- I have no problems doing my usual activities..... ☐
- I have slight problems doing my usual activities..... ☐
- I have moderate problems doing my usual activities..... ☐
- I have severe problems doing my usual activities..... ☐
- I am unable to do my usual activities..... ☐

Please **cross the one box** within each section that best describes your own health state today.

Pain / Discomfort

- I have no pain or discomfort..... ☐
- I have slight pain or discomfort..... ☐
- I have moderate pain or discomfort..... ☐
- I have severe pain or discomfort..... ☐
- I have extreme pain or discomfort..... ☐

Anxiety / Depression

- I am not anxious or depressed..... ☐
- I am slightly anxious or depressed..... ☐
- I am moderately anxious or depressed..... ☐
- I am severely anxious or depressed..... ☐
- I am extremely anxious or depressed..... ☐

2) In general, would you say your health is: *(Please cross one box)*

Excellent	Very Good	Good	Fair	Poor
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3) Compared to one year ago, how would you rate your health in general **now**? *(Please cross one box)*

Much better now than one year ago	Somewhat better now than one year ago	About the same as one year ago	Somewhat worse now than one year ago	Much worse now than one year ago
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4) During the **past four weeks**, how much of the time have you had any of the following problems with your work or other regular daily activities **as a result of your physical health**? *(Please cross one box on each line)*

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a) Cut down on the amount of time you spent on work or other activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Accomplished less than you would like	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Were limited in the kind of work or other activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Had difficulty performing the work or other activities (for example, it took extra effort)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5) During the **past four weeks**, how much of the time have you had any of the following problems with your work or other regular daily activities **as a result of any emotional problems** (such as feeling depressed or anxious)?
(Please cross one box on each line)

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a) Cut down on the amount of time you spent on work or other activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Accomplished less than you would like	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Did work or other activities less carefully than usual	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6) The following questions are about activities you might do during a typical day. Does **your health now limit you** in these activities? If so, how much?
(Please cross one box on each line)

	Yes, limited a lot	Yes, limited a little	No, not limited at all
a) Vigorous activities , such as running, lifting heavy objects, participating in strenuous sports.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Moderate activities , such as moving a table, pushing a vacuum cleaner, bowling, playing golf.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Lifting or carrying groceries.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Climbing several flights of stairs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Climbing one flight of stairs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Bending, kneeling or stooping.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Walking more than a mile .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Walking several hundred yards .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Walking one hundred yards .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Bathing or dressing yourself.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7) In the last week, on how many days did you do vigorous physical activities?

None	1 day	2 days	3 days	4 days	5 days or more
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8) How TRUE or FALSE is **each** of the following statements for you?
(Please cross one box on each line)

	Definitely true	Mostly true	Don't know	Mostly false	Definitely false
a) I seem to get sick a little easier than other people	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) I am as healthy as anybody I know	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) I expect my health to get worse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) My health is excellent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please cross one box for each of the following questions.

9) During the **past four weeks**, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbours, or groups?

Not at all	Slightly	Moderately	Quite a bit	Extremely
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10) How much **bodily pain** have you had during the **past four weeks**?

None	Very mild	Mild	Moderate	Severe	Very severe
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please cross one box for each of the following questions.

11) During the past **four weeks**, how much did **pain** interfere with your normal work (including both work outside the home and housework)?

Not at all	A little bit	Moderately	Quite a bit	Extremely
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12) During the **past four weeks**, how much of the time has your **physical health or emotional problems** interfered with your social activities (like visiting with friends, relatives, etc.)?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13) This question is about your **sleep patterns** over the **last four weeks**.

(Please cross one box on each line)

Over the last four weeks did you...	Not at all	On some nights	On most nights
a) Have trouble falling asleep?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Wake up several times in the night?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Have trouble staying asleep?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Wake up after your usual sleep feeling tired and worn out?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14) These questions are about how you feel and how things have been with you **during the past four weeks**. For each question, please give the one answer that comes closest to the way you have been feeling.

(Please cross one box on each line)

How much time during the past four weeks...	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a) Did you feel full of life?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have you been very nervous?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Have you felt so down in the dumps that nothing could cheer you up?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Have you felt calm and peaceful?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Did you have a lot of energy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Have you felt downhearted and depressed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Did you feel worn out?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Have you been happy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Did you feel tired?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section E

These questions are about your employment status.

1) Are you currently **employed**?

Yes ☐ Continue with **question 2**

No ☐ Go to **question 5** below

2) How **satisfied** are you with your **employment**? (Please cross one box)

Very satisfied	Satisfied	Slightly dissatisfied	Severely dissatisfied
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3) If you are employed, are you currently...(Please cross one box)

Doing your usual job	<input type="checkbox"/>
On paid annual leave / holiday	<input type="checkbox"/>
Working fewer hours	<input type="checkbox"/>
Doing lighter duties	<input type="checkbox"/>
On paid sick leave	<input type="checkbox"/>
On unpaid leave	<input type="checkbox"/>

4) If you are **not** doing your usual job, is this because of your pain condition?

Yes ☐ No ☐

5) If you are not **currently employed** are you...

Not working due to your pain condition	<input type="checkbox"/>
Looking after the home/children	<input type="checkbox"/>
Retired	<input type="checkbox"/>
A student	<input type="checkbox"/>
Not working for another reason	<input type="checkbox"/>

END OF QUESTIONNAIRE

Thank you for taking the time to fill in this questionnaire, your answers will be very useful to us. Please check that you have answered all of the questions.

Please fill in **today's** date:

Day		Month		Year			
				2	0		

If you have any further questions about this questionnaire or the study in general, you can telephone Nicola Halliday on 01782 734987 during office hours. Nicola is the study co-ordinator for this project.

If you have recently changed your address or telephone number, or are planning to move house in the next month or so, please telephone Nicola Halliday on 01782 734987 with your new details, or enclose them with this questionnaire. This will ensure that the researchers continue to keep your information up to date.


Please return your questionnaire in the FREEPOST envelope provided (no stamp needed).


Thank you for your help with this research project.

Appendix 13: TAPS baseline questionnaire

6465

TeleForm ID

**Keele
University**

**T
A
P
S**

Initial Pain Questionnaire

**Please complete this questionnaire and return it in the
pre-paid envelope provided**

The Treatment for Aches and Pain Study (TAPS) is funded by the Programme
Grants for Applied Research Programme: RP-PG-1211-20010.

Funded by
NHS
*National Institute for
Health Research*

TAPS Initial Questionnaire Pain v3.1 15082016
IRAS ref: 186079

1



6465

TeleForm ID

INSTRUCTIONS FOR THIS QUESTIONNAIRE

Please complete this form in **BLACK** pen and **BLOCK CAPITALS**

The aim of this questionnaire is to find out more about you and your **pain**.

There are no right or wrong answers and no one will be able to identify you from your responses.

Please answer **all** the questions unless the instructions ask you to do something else.

Most of the questions can be answered by putting a **cross** in a box next to or under your answer.

For example: how to answer a question if you **don't** have any pain:

No pain										Worst pain ever
0	1	2	3	4	5	6	7	8	9	10
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you have any questions, or need help completing this questionnaire, please telephone the TAPS study team during office hours on 01782 734879 or email NSTCCG.TAPS@nhs.net

Thank you for your help with this study.

Please continue and fill in this questionnaire.



Please enter today's date

D	D	M	M	Y	Y
				2	0

--

TeleForm ID

SECTION A - ABOUT YOUR PAIN

The following questions are about the **pain you recently visited your doctor about at your GP Practice.**

Thinking about your **pain**:

1) Over the **last 2 weeks**, on average, how intense was your pain?

(Please cross one box)

No
pain

Worst pain
ever

0	1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2) Over the **last 2 weeks**, on average, how much distress have you been experiencing because of your pain? *(Please cross one box)*

No
distress

Extreme
distress

0	1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3) How confident have you felt about managing your pain by yourself (e.g. medication, changing lifestyle)? *(Please cross one box)*

Not at all
confident

Extremely
confident

0	1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4) How long is it since you had a **whole month without any pain**? *(You do not need to be exact, please cross the box nearest to your answer)*

Less than 3
months

3 to 6
months

7 to 12
months

1 to 2
years

3 to 5
years

6 to 10
years

Over 10
years

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

(Dunn KM, Croft PR. 2006)

5) In the **last week**, on how many days did you do at least moderate physical activities like gardening, bicycling at a regular pace, swimming or other fitness activities?

(Please cross one box)

0 days

1 day

2 days

3 days

4 days

5 days

6 days

7 days

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

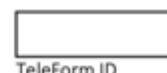
6) How many previous **pain** episodes have you experienced?

(provide estimated number):

--	--	--



6465



TeleForm ID

- 7) These questions ask for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities.

For each of the following questions, **please cross the one box** that best describes your answer.

- a) In general, would you say your health is:

Excellent

☐

Very good

☐

Good

☐

Fair

☐

Poor

☐

- b) The following questions are about activities you might do during a **typical day**. Does your health now limit you in these activities? If so, **how much**?

	Yes, limited a lot	Yes, limited a little	No, not limited at all
Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Climbing several flights of stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- c) During the **past week**, **how much** of the time have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
Accomplished less than you would like	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were limited in the kind of work or other activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- d) During the **past week**, **how much** of the time have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
Accomplished less than you would like	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did work or other activities less carefully than usual	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

e) During the **past week**, how much did pain interfere with your normal work (including both work outside the home and housework)?

Not at all A little bit Moderately Quite a bit Extremely

☐ ☐ ☐ ☐ ☐

f) These questions are about how you feel and how things have been with you during the **past week**. For each question, please give the one answer that comes closest to the way you have been feeling.

How much of the time during the **past week**...

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
Have you felt calm and peaceful?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did you have a lot of energy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have you felt downhearted and low?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

g) During the **past week**, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?

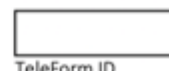
All of the time Most of the time Some of the time A little of the time None of the time

☐ ☐ ☐ ☐ ☐

(SF-12 PCS; Ware, J.E. et al, 2000)



6465



TeleForm ID

8) Please continue to think about your pain. For each question **cross one box** to indicate which statement best describes you **over the last 2 weeks**.

a) Pain/stiffness during the day How severe was your usual joint or muscle pain and/or stiffness overall during the day in the last 2 weeks?	Not at all <input type="checkbox"/>	Slightly <input type="checkbox"/>	Moderately <input type="checkbox"/>	Fairly severe <input type="checkbox"/>	Very severe <input type="checkbox"/>
b) Pain/stiffness at night How severe was your usual joint or muscle pain and/or stiffness overall during the night in the last 2 weeks?	Not at all <input type="checkbox"/>	Slightly <input type="checkbox"/>	Moderately <input type="checkbox"/>	Fairly severe <input type="checkbox"/>	Very severe <input type="checkbox"/>
c) Walking How much have your symptoms interfered with your ability to walk in the last 2 weeks?	Not at all <input type="checkbox"/>	Slightly <input type="checkbox"/>	Moderately <input type="checkbox"/>	Severely <input type="checkbox"/>	Unable to walk <input type="checkbox"/>
d) Washing/Dressing How much have your symptoms interfered with your ability to wash or dress yourself in the last 2 weeks?	Not at all <input type="checkbox"/>	Slightly <input type="checkbox"/>	Moderately <input type="checkbox"/>	Severely <input type="checkbox"/>	Unable to wash or dress myself <input type="checkbox"/>
e) Physical activity levels How much has it been a problem for you to do physical activities (e.g. going for a walk or jogging) to the level you want because of your joint or muscle symptoms in the last 2 weeks?	Not at all <input type="checkbox"/>	Slightly <input type="checkbox"/>	Moderately <input type="checkbox"/>	Very much <input type="checkbox"/>	Unable to do physical activities <input type="checkbox"/>
f) Work/daily routine How much have your joint or muscle symptoms interfered with your work or daily routine in the last 2 weeks (including work & jobs around the house)?	Not at all <input type="checkbox"/>	Slightly <input type="checkbox"/>	Moderately <input type="checkbox"/>	Severely <input type="checkbox"/>	Extremely <input type="checkbox"/>
g) Social activities and hobbies How much have your joint or muscle symptoms interfered with your social activities and hobbies in the last 2 weeks?	Not at all <input type="checkbox"/>	Slightly <input type="checkbox"/>	Moderately <input type="checkbox"/>	Severely <input type="checkbox"/>	Extremely <input type="checkbox"/>

h) Needing help How often have you needed help from others (including family, friends or carers) because of your joint or muscle symptoms in the last 2 weeks?	Not at all <input type="checkbox"/>	Rarely <input type="checkbox"/>	Sometimes <input type="checkbox"/>	Frequently <input type="checkbox"/>	All the time <input type="checkbox"/>
i) Sleep How often have you had trouble with either falling asleep or staying asleep because of your joint or muscle symptoms in the last 2 weeks?	Not at all <input type="checkbox"/>	Rarely <input type="checkbox"/>	Sometimes <input type="checkbox"/>	Frequently <input type="checkbox"/>	Every night <input type="checkbox"/>
j) Fatigue or low energy How much fatigue or low energy have you felt in the last 2 weeks?	Not at all <input type="checkbox"/>	Slight <input type="checkbox"/>	Moderate <input type="checkbox"/>	Severe <input type="checkbox"/>	Extreme <input type="checkbox"/>
k) Emotional well-being How much have you felt anxious or low in your mood because of your joint or muscle symptoms in the last 2 weeks?	Not at all <input type="checkbox"/>	Slightly <input type="checkbox"/>	Moderately <input type="checkbox"/>	Severely <input type="checkbox"/>	Extremely <input type="checkbox"/>
l) Understanding of condition and any current treatment Thinking about your joint or muscle symptoms, how well do you feel you understand your condition and any current treatment (including your diagnosis and medication)?	Completely <input type="checkbox"/>	Very Well <input type="checkbox"/>	Moderately <input type="checkbox"/>	Slightly <input type="checkbox"/>	Not at all <input type="checkbox"/>
m) Confidence in being able to manage your symptoms How confident have you felt in being able to manage your joint or muscle symptoms by yourself in the last 2 weeks (e.g. medication, changing lifestyle)?	Extremely <input type="checkbox"/>	Very <input type="checkbox"/>	Moderately <input type="checkbox"/>	Slightly <input type="checkbox"/>	Not at all <input type="checkbox"/>
n) Overall impact How much have your joint or muscle symptoms bothered you overall in the last 2 weeks ?	Not at all <input type="checkbox"/>	Slightly <input type="checkbox"/>	Moderately <input type="checkbox"/>	Very much <input type="checkbox"/>	Extremely <input type="checkbox"/>

(MSK-HQ;
Hill, J.K. et al. 2016)



TeleForm ID

9) Please continue to think about your **pain** over the **last 2 weeks**, as you answer these questions **(Please cross one box on each row)**.

	Yes	No
a) In the last 2 weeks, have you had troublesome joint or muscle pain in more than one part of your body?	<input type="checkbox"/>	<input type="checkbox"/>
b) In the last 2 weeks, have you only been able to walk short distances because of your pain?	<input type="checkbox"/>	<input type="checkbox"/>
c) In the last 2 weeks, have you had to dress more slowly than usual because of your pain?	<input type="checkbox"/>	<input type="checkbox"/>
d) Do you have any other important health problems?	<input type="checkbox"/>	<input type="checkbox"/>
e) Do you feel it is unsafe for a person with a condition like yours to be physically active?	<input type="checkbox"/>	<input type="checkbox"/>
f) Have you had worrying thoughts about your pain a lot of the time in the last 2 weeks?	<input type="checkbox"/>	<input type="checkbox"/>
g) Do you think your pain condition will last a long time?	<input type="checkbox"/>	<input type="checkbox"/>
h) In the last 2 weeks, have you stopped enjoying all the things you usually enjoy because of your pain?	<input type="checkbox"/>	<input type="checkbox"/>
i) Overall, how bothersome has your pain been in the last 2 weeks?		
Not at all <input type="checkbox"/>	Slightly <input type="checkbox"/>	Moderately <input type="checkbox"/>
Very Much <input type="checkbox"/>	Extremely <input type="checkbox"/>	

(StarT MSK Tool)

10) What long term medical conditions do you have? **(Please cross all boxes that apply)**

a) Diabetes.....	<input type="checkbox"/>
b) Breathing problems / Chronic Obstructive Pulmonary Disease (COPD) / Asthma.....	<input type="checkbox"/>
c) Heart problems or high blood pressure.....	<input type="checkbox"/>
d) Chronic fatigue syndrome, ME, fibromyalgia or widespread pain.....	<input type="checkbox"/>
e) Anxiety, depression, stress.....	<input type="checkbox"/>
f) Other (please state):	<input type="checkbox"/>



TeleForm ID

SECTION B - ABOUT YOUR CARE

- 1) The following questions concern your doctor's communication and behaviour during your consultation. Please answer all the questions as honestly as you can remember regarding whether or not each statement applies to something your doctor said or did (***please cross one box on each row***).

To what extent did your doctor...	Not at all	A great deal
a) Tell you that everything would be fine.....	<input type="checkbox"/>	<input type="checkbox"/>
b) Show that he/she understood your concerns.....	<input type="checkbox"/>	<input type="checkbox"/>
c) Reassure you that he/she had no serious concerns about your pain	<input type="checkbox"/>	<input type="checkbox"/>
d) Explain how the treatment offered would help with your problem	<input type="checkbox"/>	<input type="checkbox"/>
e) Tell you that you should not be worried.....	<input type="checkbox"/>	<input type="checkbox"/>
f) Listen attentively while you were talking.....	<input type="checkbox"/>	<input type="checkbox"/>
g) Make sure you understood what your treatment plan involves.....	<input type="checkbox"/>	<input type="checkbox"/>
h) Put you at ease.....	<input type="checkbox"/>	<input type="checkbox"/>
i) Summarise what you had told them.....	<input type="checkbox"/>	<input type="checkbox"/>
j) Show a genuine interest in your problem.....	<input type="checkbox"/>	<input type="checkbox"/>
k) Encourage you to voice your concerns regarding your symptoms	<input type="checkbox"/>	<input type="checkbox"/>
l) Check you understood the explanation he/she gave for your symptoms	<input type="checkbox"/>	<input type="checkbox"/>

(Holt et al. 2016)

- 2) Did you receive any printed or online information from your doctor about your **pain**? (***Please cross one box***)

Yes
☐

No
☐

Don't Remember
☐

- 3) How satisfied are you with the care you have received for your **pain** in the **last few months**? (***Please cross one box***)

Very satisfied
☐

Quite satisfied
☐

No opinion
☐

Not very satisfied
☐

Not at all satisfied
☐

- 4) With respect to your **pain**, how would you describe yourself now compared to how it was when you **recently** saw your doctor?

Put a cross in the box that best describes your **pain** now:

-5
☐

-4
☐

-3
☐

-2
☐

-1
☐

0
☐

1
☐

2
☐

3
☐

4
☐

5
☐

Very much worse

Unchanged

Completely recovered



6465

TeleForm ID

SECTION C - ABOUT YOUR GENERAL HEALTH

1) Under each heading, **please cross the ONE box** that best describes your health **TODAY**.

MOBILITY

- ☐ I have no problems in walking about
- ☐ I have slight problems in walking about
- ☐ I have moderate problems in walking about
- ☐ I have severe problems in walking about
- ☐ I am unable to walk about

SELF-CARE

- ☐ I have no problems washing or dressing myself
- ☐ I have slight problems washing or dressing myself
- ☐ I have moderate problems washing or dressing myself
- ☐ I have severe problems washing or dressing myself
- ☐ I am unable to wash or dress myself

USUAL ACTIVITIES (e.g. work, study, housework, family or leisure activities)

- ☐ I have no problems doing my usual activities
- ☐ I have slight problems doing my usual activities
- ☐ I have moderate problems doing my usual activities
- ☐ I have severe problems doing my usual activities
- ☐ I am unable to do my usual activities

PAIN/DISCOMFORT

- ☐ I have no pain or discomfort
- ☐ I have slight pain or discomfort
- ☐ I have moderate pain or discomfort
- ☐ I have severe pain or discomfort
- ☐ I have extreme pain or discomfort

ANXIETY/DEPRESSION

- ☐ I am not anxious or depressed
- ☐ I am slightly anxious or depressed
- ☐ I am moderately anxious or depressed
- ☐ I am severely anxious or depressed
- ☐ I am extremely anxious or depressed



6465

TeleForm ID

2) This is a list of phrases which other patients have used to express how they view their condition. Please **put a cross in the box** that best describes how you feel about each statement (*please cross one box on each row*).

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
a) I'm afraid I might injure myself if I exercise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) If I were to try to overcome it, my pain would increase	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) My body is telling me I have something dangerously wrong	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) People aren't taking my medical condition seriously enough	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) My accident/problem has put my body at risk for the rest of my life	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Pain always means I have injured my body	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Simply being careful that I do not make any unnecessary movements is the safest thing I can do to prevent my pain from worsening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) I wouldn't have this much pain if there wasn't something potentially dangerous going on in my body	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Pain lets me know when to stop exercising so that I don't injure myself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) I can't do all the things normal people do because it's too easy for me to get injured	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) No one should have to exercise when he/she is in pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(adapted from TSK-11; Woby et al. 2005)

3) How often do you need to have someone help you when you read instructions, pamphlets, or other written material from your doctor or pharmacy? (*Please cross one box*)

Never

☐

Rarely

☐

Sometimes

☐

Often

☐

Always

☐

(Morris et al. 2006)



6465

TeleForm ID

SECTION D - ABOUT YOU & RECENT EMPLOYMENT HISTORY

1) Do you currently live alone? *(Please cross one box)*

☐ Yes ☐ No

2) What is your current or most recent paid **job title** (even if you are now retired)?

3) What type of work is (or was) this job (e.g. banking, building, cleaning, pottery, office, retail, etc.)?

4) Are you currently in paid employment (full-time or part-time)? *(Please cross one box)*

☐ Yes Please go to **Question 5**.

☐ No If not in paid employment please go to **Question 7**.

5) On average to what extent has your **pain** or related problem affected your performance at work over the past **6 months**? *(Please cross one box)*

Not at all

So bad I am unable
to do my job

0	1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6) Have you taken time off work in the last **6 months because of your pain**? *(Please cross one box)*

☐ Yes Please see below.

☐ No Please go to **Question 7**.

If yes, please write the number of days, weeks or months you were off work due to your **pain** in the last **6 months**.

Days

Weeks

Months

7) Please confirm that you are the patient completing this yourself or if someone else is completing it on your behalf? *(Please cross one box)*

I am the patient

☐

I am a carer/relative

☐

I am staff

☐

I am someone else

☐



6465

TeleForm ID

Please continue onto the next page...





6465

TeleForm ID

Please continue onto the next page...

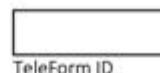


TAPS Initial Questionnaire Pain v3.1 15082016
IRAS ref: 186079

14

Study ID







6465

TeleForm ID

CONSENT FORM

To consent to take part in the TAPS study please tick **ALL** of the following statements, then sign and print your name below:

- ☐ I have read and understood the TAPS study patient information leaflet [date/version] and am willing to take part
- ☐ I understand that the study research team will be given my contact details by my general practice in order to be followed-up as part of this study
- ☐ I am willing to receive another questionnaire in 6 months' time
- ☐ I am willing to receive monthly follow-up questions about my pain
- ☐ I understand that I can withdraw from the study at any time, and that this will not affect the care I receive in any way
- ☐ I am willing for my general practice medical records to be reviewed by an authorised person from the research team at Keele University for this study.

Signed..... Date:

D	D	M	M	Y	Y
				2	0

Name (please print name).....

All completed questionnaires will be **entered into a free prize draw (£25 shopping voucher)**. If you **DO NOT** wish to be entered into this draw, please cross the box below.


☐ I do not wish to be included in the free prize draw.


Please now return your signed questionnaire in the **pre-paid envelope provided** (you do not need a stamp).

Appendix 14: TAPS six-month questionnaire

51587

TeleForm ID

 Keele University



6 Month Pain Questionnaire

Please complete this questionnaire and return it in the pre-paid envelope provided

The Treatment for Aches and Pain Study (TAPS) is funded by the Programme Grants for Applied Research Programme: RP-PG-1211-20010.

Funded by
NHS
National Institute for Health Research

TAPS 6M Questionnaire Pain v3.1 15082016
IRAS ref: 186079

1



51587

TeleForm ID

INSTRUCTIONS FOR THIS QUESTIONNAIRE

Please complete this questionnaire in **BLACK** pen and **BLOCK CAPITALS**

The aim of this questionnaire is to find out more about you and your **pain**.

There are no right or wrong answers and no one will be able to identify you from your responses.

Please answer **all** the questions unless the instructions ask you to do something else.

Most of the questions can be answered by putting a **cross** in a box next to or under your answer.

For example: how to answer a question if you **don't** have any pain:

No pain										Worst pain ever
0	1	2	3	4	5	6	7	8	9	10
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you have any questions, or need help completing this questionnaire, please telephone the TAPS study team during office hours on 01782 734879 or email NSTCCG.TAPS@nhs.net

Thank you for your help with this study.

Please continue and fill in this questionnaire.



Please enter today's date

TeleForm ID

D	D			/	M	M			/	2	0			Y	Y
---	---	--	--	---	---	---	--	--	---	---	---	--	--	---	---

SECTION A - ABOUT YOUR PAIN

The following questions are about the **pain you visited your doctor about at your GP Practice around 6 months ago**.

Thinking about your **pain**:

1) Over the **last 2 weeks**, on average, how intense was your pain?

(Please cross one box)

No
pain

Worst pain
ever

0	1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2) With respect to your **pain**, how would you describe yourself now compared to how it was when you saw your doctor **around 6 months ago**?

Put a cross in the box that best describes your **pain** now:

-5	-4	-3	-2	-1	0	1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Very much worse			Unchanged				Completely recovered			

3) How satisfied are you with the care you have received for your **pain** in the **last few months**? *(Please cross one box)*

Very satisfied	Quite satisfied	No opinion	Not very satisfied	Not at all satisfied
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



51587

TeleForm ID

- 4) These questions ask for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities.

For each of the following questions, **please cross the one box** that best describes your answer.

- a) In general, would you say your health is:

Excellent	Very good	Good	Fair	Poor
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- b) The following questions are about activities you might do during a **typical day**. Does your health now limit you in these activities? If so, **how much**?

	Yes, limited a lot	Yes, limited a little	No, not limited at all
Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Climbing several flights of stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- c) During the **past week**, **how much** of the time have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
Accomplished less than you would like	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were limited in the kind of work or other activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- d) During the **past week**, **how much** of the time have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
Accomplished less than you would like	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did work or other activities less carefully than usual	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



51587

TeleForm ID

e) During the **past week**, how much did pain interfere with your normal work (including both work outside the home and housework)?

Not at all

A little bit

Moderately

Quite a bit

Extremely

☐☐☐☐☐

f) These questions are about how you feel and how things have been with you during the **past week**. For each question, please give the one answer that comes closest to the way you have been feeling.

How much of the time during the **past week**...

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
Have you felt calm and peaceful?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did you have a lot of energy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have you felt downhearted and low?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

g) During the **past week**, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?

All of the time

Most of the time

Some of the time

A little of the time

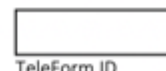
None of the time

☐☐☐☐☐

(SF-12 PCS; Ware, J.E. et al, 2000)



51587



TeleForm ID

5) Please continue to think about your **pain**. For each question **cross one box** to indicate which statement best describes you **over the last 2 weeks**.

a) Pain/stiffness during the day How severe was your usual joint or muscle pain and/or stiffness overall during the day in the last 2 weeks?	Not at all <input type="checkbox"/>	Slightly <input type="checkbox"/>	Moderately <input type="checkbox"/>	Fairly severe <input type="checkbox"/>	Very severe <input type="checkbox"/>
b) Pain/stiffness at night How severe was your usual joint or muscle pain and/or stiffness overall during the night in the last 2 weeks?	Not at all <input type="checkbox"/>	Slightly <input type="checkbox"/>	Moderately <input type="checkbox"/>	Fairly severe <input type="checkbox"/>	Very severe <input type="checkbox"/>
c) Walking How much have your symptoms interfered with your ability to walk in the last 2 weeks?	Not at all <input type="checkbox"/>	Slightly <input type="checkbox"/>	Moderately <input type="checkbox"/>	Severely <input type="checkbox"/>	Unable to walk <input type="checkbox"/>
d) Washing/Dressing How much have your symptoms interfered with your ability to wash or dress yourself in the last 2 weeks?	Not at all <input type="checkbox"/>	Slightly <input type="checkbox"/>	Moderately <input type="checkbox"/>	Severely <input type="checkbox"/>	Unable to wash or dress myself <input type="checkbox"/>
e) Physical activity levels How much has it been a problem for you to do physical activities (e.g. going for a walk or jogging) to the level you want because of your joint or muscle symptoms in the last 2 weeks?	Not at all <input type="checkbox"/>	Slightly <input type="checkbox"/>	Moderately <input type="checkbox"/>	Very much <input type="checkbox"/>	Unable to do physical activities <input type="checkbox"/>
f) Work/daily routine How much have your joint or muscle symptoms interfered with your work or daily routine in the last 2 weeks (including work & jobs around the house)?	Not at all <input type="checkbox"/>	Slightly <input type="checkbox"/>	Moderately <input type="checkbox"/>	Severely <input type="checkbox"/>	Extremely <input type="checkbox"/>
g) Social activities and hobbies How much have your joint or muscle symptoms interfered with your social activities and hobbies in the last 2 weeks?	Not at all <input type="checkbox"/>	Slightly <input type="checkbox"/>	Moderately <input type="checkbox"/>	Severely <input type="checkbox"/>	Extremely <input type="checkbox"/>



51587

TeleForm ID

h) Needing help How often have you needed help from others (including family, friends or carers) because of your joint or muscle symptoms in the last 2 weeks?	Not at all <input type="checkbox"/>	Rarely <input type="checkbox"/>	Sometimes <input type="checkbox"/>	Frequently <input type="checkbox"/>	All the time <input type="checkbox"/>
i) Sleep How often have you had trouble with either falling asleep or staying asleep because of your joint or muscle symptoms in the last 2 weeks?	Not at all <input type="checkbox"/>	Rarely <input type="checkbox"/>	Sometimes <input type="checkbox"/>	Frequently <input type="checkbox"/>	Every night <input type="checkbox"/>
j) Fatigue or low energy How much fatigue or low energy have you felt in the last 2 weeks?	Not at all <input type="checkbox"/>	Slight <input type="checkbox"/>	Moderate <input type="checkbox"/>	Severe <input type="checkbox"/>	Extreme <input type="checkbox"/>
k) Emotional well-being How much have you felt anxious or low in your mood because of your joint or muscle symptoms in the last 2 weeks?	Not at all <input type="checkbox"/>	Slightly <input type="checkbox"/>	Moderately <input type="checkbox"/>	Severely <input type="checkbox"/>	Extremely <input type="checkbox"/>
l) Understanding of condition and any current treatment Thinking about your joint or muscle symptoms, how well do you feel you understand your condition and any current treatment (including your diagnosis and medication)?	Completely <input type="checkbox"/>	Very Well <input type="checkbox"/>	Moderately <input type="checkbox"/>	Slightly <input type="checkbox"/>	Not at all <input type="checkbox"/>
m) Confidence in being able to manage your symptoms How confident have you felt in being able to manage your joint or muscle symptoms by yourself in the last 2 weeks (e.g. medication, changing lifestyle)?	Extremely <input type="checkbox"/>	Very <input type="checkbox"/>	Moderately <input type="checkbox"/>	Slightly <input type="checkbox"/>	Not at all <input type="checkbox"/>
n) Overall impact How much have your joint or muscle symptoms bothered you overall in the last 2 weeks ?	Not at all <input type="checkbox"/>	Slightly <input type="checkbox"/>	Moderately <input type="checkbox"/>	Very much <input type="checkbox"/>	Extremely <input type="checkbox"/>

(MSK-HQ;
Hill, J.K. et al. 2016)



51587

TeleForm ID

6) Please continue to think about your **pain** over the **last 2 weeks**, as you answer these questions **(Please cross one box on each row)**.

	Yes	No
a) In the last 2 weeks, have you had troublesome joint or muscle pain in more than one part of your body?	<input type="checkbox"/>	<input type="checkbox"/>
b) In the last 2 weeks, have you only been able to walk short distances because of your pain?	<input type="checkbox"/>	<input type="checkbox"/>
c) In the last 2 weeks, have you had to dress more slowly than usual because of your pain?	<input type="checkbox"/>	<input type="checkbox"/>
d) Do you have any other important health problems?	<input type="checkbox"/>	<input type="checkbox"/>
e) Do you feel it is unsafe for a person with a condition like yours to be physically active?	<input type="checkbox"/>	<input type="checkbox"/>
f) Have you had worrying thoughts about your pain a lot of the time in the last 2 weeks?	<input type="checkbox"/>	<input type="checkbox"/>
g) Do you think your pain condition will last a long time?	<input type="checkbox"/>	<input type="checkbox"/>
h) In the last 2 weeks, have you stopped enjoying all the things you usually enjoy because of your pain?	<input type="checkbox"/>	<input type="checkbox"/>
i) Overall, how bothersome has your pain been in the last 2 weeks?		
Not at all <input type="checkbox"/>	Slightly <input type="checkbox"/>	Moderately <input type="checkbox"/>
Very Much <input type="checkbox"/>	Extremely <input type="checkbox"/>	

(StarT MSK Tool)

7) In the **last week**, on how many days did you do at least moderate physical activities like gardening, bicycling at a regular pace, swimming or other fitness activities?
(Please cross one box)

0 days	1 day	2 days	3 days	4 days	5 days	6 days	7 days
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



51587

TeleForm ID

SECTION B - ABOUT YOUR GENERAL HEALTH

1) Under each heading, please cross the **ONE** box that best describes your health **TODAY**.

MOBILITY

- ☐ I have no problems in walking about
- ☐ I have slight problems in walking about
- ☐ I have moderate problems in walking about
- ☐ I have severe problems in walking about
- ☐ I am unable to walk about

SELF-CARE

- ☐ I have no problems washing or dressing myself
- ☐ I have slight problems washing or dressing myself
- ☐ I have moderate problems washing or dressing myself
- ☐ I have severe problems washing or dressing myself
- ☐ I am unable to wash or dress myself

USUAL ACTIVITIES (e.g. work, study, housework, family or leisure activities)

- ☐ I have no problems doing my usual activities
- ☐ I have slight problems doing my usual activities
- ☐ I have moderate problems doing my usual activities
- ☐ I have severe problems doing my usual activities
- ☐ I am unable to do my usual activities

PAIN/DISCOMFORT

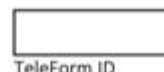
- ☐ I have no pain or discomfort
- ☐ I have slight pain or discomfort
- ☐ I have moderate pain or discomfort
- ☐ I have severe pain or discomfort
- ☐ I have extreme pain or discomfort

ANXIETY/DEPRESSION

- ☐ I am not anxious or depressed
- ☐ I am slightly anxious or depressed
- ☐ I am moderately anxious or depressed
- ☐ I am severely anxious or depressed
- ☐ I am extremely anxious or depressed



51587



TeleForm ID

- 2) This is a list of phrases which other patients have used to express how they view their condition. Please **put a cross in the box** that best describes how you feel about each statement (*please cross one box on each row*).

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
a) I'm afraid I might injure myself if I exercise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) If I were to try to overcome it, my pain would increase	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) My body is telling me I have something dangerously wrong	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) People aren't taking my medical condition seriously enough	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) My accident/problem has put my body at risk for the rest of my life	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Pain always means I have injured my body	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Simply being careful that I do not make any unnecessary movements is the safest thing I can do to prevent my pain from worsening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) I wouldn't have this much pain if there wasn't something potentially dangerous going on in my body	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Pain lets me know when to stop exercising so that I don't injure myself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) I can't do all the things normal people do because it's too easy for me to get injured	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) No one should have to exercise when he/she is in pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(adapted from TSK-11; Woby et al. 2005)

SECTION C - ABOUT YOU & YOUR HEALTH

- 1) During the **last 6 months**, have you been to see any health care professionals for your **pain condition**, either at your **GP practice**, in other **NHS services** or **private care**?
Visits for specific investigations or treatments (e.g. x-rays, surgery) are covered in question 2 below.

☐ Yes Please complete the table below to give us some details.

☐ No Please go to **Question 2 below**.

Please write in the **number of times** you have seen each health care professional in the **last 6 months for your pain condition**.

Health care professional	General Practice		NHS		Private	
<i>e.g. Physiotherapist</i>	0	1	0	3	0	0
GP.....						
Nurse.....						
Consultant / specialist / hospital doctor (outpatient clinic).....						
Physiotherapist.....						
Acupuncturist.....						
Osteopath / Chiropractor.....						
Other (<i>please specify</i>).....						
Other (<i>please specify</i>).....						

- 2) In the **last 6 months**, have you attended an **NHS** or **private hospital** for any investigations or treatments (e.g. x-ray, MRI scan, surgery, epidural injection) related to your **pain condition**?
Please **do not** include any initial appointments reported in question 1 of this section.

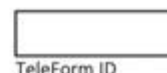
☐ Yes Please complete the table below to give us some details.

☐ No Please go to **Question 3 on the next page**.

Treatment or investigation	Reason for attendance	Number of investigations or treatments in NHS		Number of investigations or treatments in private practice	
<i>e.g. x-ray</i>	<i>pain condition</i>	0	1	0	1



51587



TeleForm ID

3) In the **last 6 months**, have you **stayed overnight** as an inpatient in an **NHS or private hospital** for your **pain condition**?

☐ Yes Please complete the table below to give us some details.

☐ No Please go to **Question 4 below**.

Reason for inpatient stay	Number of days in NHS hospital		Number of days in private hospital	
<i>e.g. hip joint replacement</i>	0	7	0	0

4) Are you currently in paid employment (full-time or part-time)? **(Please cross one box)**

☐ Yes Please go to **Question 5**.

☐ No If not in paid employment please go to **Page 13**.

5) On average to what extent has your **pain** or related problem affected your performance at work over the past **6 months**? **(Please cross one box)**

Not at all

So bad I am unable
to do my job

0 1 2 3 4 5 6 7 8 9 10
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

6) Have you taken time off work in the last **6 months** because of your **pain**?
(Please cross one box)

☐ Yes Please see below.

☐ No

If yes, please write the number of days, weeks or months you were off work due to your **pain** in the last **6 months**.

Days

Weeks

Months



51587

TeleForm ID



Thank you for completing this questionnaire.

Please check that you have answered all the relevant questions.

You have now completed the Keele TAPS study. We are very grateful for your help in this research study.

Please return your questionnaire in the pre-paid envelope provided (you do not need a stamp).

If you have any questions or need further information please contact the TAPS study team during office hours on 01782 734987 or email NSTCCG.TAPS@nhs.net



Appendix 15: Dissemination

Internal presentations:

- School of Primary, Community and Social Care Postgraduate Research Symposium 2017, 2018, 2019
- Stratified Care Research Group meetings
- School of Primary, Community and Social Care Internal Seminar

External presentations:

- British Society for Gerontology Annual Conference; Early Career Researchers in Ageing (June 2017)
- Society for Back Pain Research Annual General Meeting (November 2017)
- International Forum for Back and Neck Pain Research in Primary Care (2019)
- Division of Health Psychology Annual Conference (2019)

Planned papers:

1. A quantitative paper presenting the validity of the STarT MSK tool by age across both self-report and point-of-consultation datasets.
2. A qualitative paper presenting the views of both older adults and clinicians, disseminating the themes of 'reassurance' and 'negotiation'.
3. A qualitative paper focused on the views of clinicians, disseminating the theme 'age-specific clinician concerns'.

PPIE:

- Findings will be disseminated back to the older adults who took participated in the qualitative phase of the study, through a letter and leaflet.