

DOCTOR OF PHILOSOPHY

Management of chronic musculoskeletal disorders in the workplace from the perspective of older employees A mixed methods research study

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Award date:
2022

Awarding institution:
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**Management of chronic
musculoskeletal disorders in the
workplace from the perspective
of older employees: A mixed
methods research study**



Glykeria Skamagki

(PhD)

February 2022

Management of chronic musculoskeletal disorders in the workplace from the perspective of older employees: A mixed methods research study

Glykeria Skamagki

A thesis submitted in partial fulfilment of the University's requirements for the Degree of Doctor of Philosophy

February 2022



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Applicant:

Glykeria Skamagki

Project Title:

How do employers and employees manage chronic musculoskeletal (MSK)
conditions at workplace?

This is to certify that the above named applicant has completed the Coventry University Ethical Approval process and their project has been confirmed and approved as Low Risk

Date of approval:

13 March 2017

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What are the strategies that older employees who experience chronic musculoskeletal disorders use to manage their conditions at the workplace?

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Acknowledgements

Writing this thesis has been part of my everyday life throughout the past five years. It was a long journey that followed me in my day-to-day work, late evenings, holidays, and weekends. However, I was blessed to have been accompanied by important people who gave their time to share their insights, expertise, experiences, and people who have been waiting next to me patiently and supported me in this long journey. This thesis would have been impossible without them, and I would like to take the opportunity to acknowledge those who have contributed in different ways.

Firstly, I would like to thank all the participants and respondents who took time out of their busy lives to contribute to this work. I would then like to thank my supervisory team as none of this would have been possible without them. I am most grateful for my Director of Studies, Dr Andrew King, who believed in me and my ideas from the very beginning. I am indebted for his unwavering integrity, support, and encouragement that he offered generously even on the busiest times throughout the project. Thanks to Dr Charlotte Wåhlin, who far surpassed her supervisor duties and could not have been a better female role model in academia. I also want to thank Professor Andy Turner, who brought his extensive experience to this project and guided me through the final phases of this study. My deepest gratitude goes to Dr Christine Carpenter for her unwavering support of my PhD project and my development as a researcher. I am forever grateful for the time and energy you have invested in me as a mentor, supervisor and friend. I will never forget your invaluable guidance

throughout these years. Finally, I would like to thank Professor Michael Duncan for supporting the first two years of my PhD journey.

It is often said that a PhD is a solitary journey; however, I have been lucky to be accompanied by friends whose encouragement, support, and friendship motivated me to continue until the end: Melanie, Pauline, Nora, Lesley, Panos, Natassa, Kiki, Glykeria and Savvina. Thank you all. Most of all, I am grateful to one of my closest friends, Anna, who was making sure my life is not all about work, and my dearest friend and fellow PhD candidate, Isa, for the endless conversations, positive vibes, and support in the research process. I would like to thank my family in Greece, especially my mum Sofia, for raising me to chase my dreams and be fearless and independent. But I would also like to thank my new family in the UK, especially Julie, for letting me into her home providing a warm and supportive atmosphere. Finally, to Matthew, the love of my life. Thank you for always being positive and supportive of whatever crazy idea I get.

Abstract

Introduction

Chronic musculoskeletal disorders (CMSDs) are one of the major health issues affecting European workplaces. Demographic changes have prompted governments to change retirement policies and extend the pension age. The move towards sustained employability over the longer term poses many challenges for older employees that may not be in line with the political agenda. This Mixed Methods Research (MMR) study was grounded in a pragmatist paradigm and implemented an exploratory sequential design involving two components: qualitative and survey research. The study was conducted in the West Midlands. The aim of the study was to explore employees' experiences of CMSDs in relation to their employment, their perspectives on managing these conditions in the workplace, the strategies used to facilitate and maintain their roles and responsibilities, and to identify what services are offered to them.

Methods

In the first qualitative phase, 15 semi-structured interviews were conducted to gather in-depth information from employees with a CMSD who were over the age of 50. This qualitative data informed the development of an online questionnaire in the second descriptive cross-sectional survey phase. The questionnaire was administered to older employees (N=107) with a CMSD working in a diversity of work environments.

Results

The qualitative and survey research findings were integrated using a rigorous approach and a joint display to illustrate the integrative process. The integrated findings illustrated the uncertainty that older employees with CMSDs face and highlighted the role of social support in encouraging disclosure and supporting the management of CMSDs. These findings also indicated that the phenomena of presenteeism and leaveism are important components to employees' strategies for managing their CMSDs. Participants expanded on the impact of state pension age changes on retirement and specifically exposed how these changes affected, in particular, women and those with chronic inflammatory conditions. The integrated findings illustrated the role and responsibilities of employers and managers in supporting the older employees with CMSDs and emphasised how self-management and professional health services are crucial in sustaining employability. The implications for practice, policy and research were discussed and a number of recommendations, derived from the findings, were made (a) for employers and managers to better support the ageing workforce with CMSDs, (b) for employees to highlight workplace strategy options and enhance their confidence in managing a CMSD at work, and (c) the need for further research that supports the occupational health agenda as it relates to the ageing workforce was identified. Finally, two draft leaflets were produced by which the recommendations and strategies could be disseminated to employers and managers and employees with CMSDs.

Conclusions

This study used a MMR approach to explore the complex issues of sustaining employability for older employees with a CMSD taking into consideration the changes in the socio-political environment. The findings suggest that individualised support could best assist older employees to remain employable especially those whose retirement age has been raised. Current challenges call for employers to identify effective ways to support the ageing workforce and invest in training opportunities for managers and collaborative opportunities with HCPs and other stakeholders. A flexible, empathetic, and resourceful work environment is optimal in supporting sustained employability for an ageing workforce.

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Abbreviations

AIMS	Arthritis Impact Measurement Scale
CIPD	Chartered Institute of Personnel and Development
CIDs	Chronic Inflammatory Disorders
CMSDs	Chronic Musculoskeletal Disorders
CI	Confidence Interval
CDM	Convergence Dialogue Method
COVID-19	Coronavirus
CASP	Critical Appraisal Skills Programme
DWP	Department for Work and Pensions
DHSC	Department of Health and Social Care
DoS	Director of Studies
DASH	Disability of Arm, Shoulder and Hand
EU-OSHA	European Agency for Safety and Health at Work
EU	European Union
GBD	Global Burden of Disease
HSE	Health and Safety Executive
HCPs	Healthcare Professionals
HCSPs	Healthcare Service Providers
HM	Her Majesty's
HR	Human Resource
ITT	Intention-to-Treat
ICF	International Classification of Functioning, Disability and Health
IT	International Technology
JBI-QARI	Joanna Briggs Institute Critical Appraisal tool
LBP	Low Back Pain
MMR	Mixed Methods Research
MSK	Musculoskeletal
MSDs	Musculoskeletal Disorders
NHS	National Health Service
NICE	National Institute for Health and Care Excellence
NOS	National Office of Statistics
NDI	Neck Disability Index
NPRS	Numeric Pain Rating Scale
OHS	Occupational Health Service
ONS	Office for National Statistics
OA	Osteoarthritis
PHE	Public Health England
RCT	Randomised Controlled Trial (
RR	Response Rates
RTW	Return-to-Work

RhA	Rheumatoid Arthritis
RDQ	Roland Disability Questionnaire
SIGN	Scottish Intercollegiate Guidelines Network
SMEs	Small and Medium-size Enterprises
SEF	Socio-Ecological Framework
SPS	Stanford Presenteeism Scale
SPA	State Pension Age
SPSS	Statistical Product and Service Solutions
UK	United Kingdom
WASPI	Women Against State Pension Inequality
WAI	Work Ability Index
WAIS	Work Ability Index Score
WHO	World Health Organization

‘ἢ τὰν ἢ ἐπὶ τᾷς’

Translation from ancient Greek:

‘Come back with your shield - or on it’

(Plutarch, Moralia, 241)

Chapter 1: Setting the scene

1.1 Introduction

The thesis documents my exploration of the management of chronic musculoskeletal conditions (CSMDs) in the workplace focusing on the ageing workforce. This original research used a mixed methods research (MMR) approach within a pragmatist worldview. It explored, using semi-structured interviews and an online questionnaire, the experiences of older employees managing CMSDs in the workplace and the strategies that they developed and that were offered by employers. These findings were then integrated and discussed extensively.

This introduction provides a brief general background context for the discussion to follow and creates an overall picture of the thesis. Consequently, I begin this chapter by considering the factors which were the basis for my decision to explore this particular research topic. Then I set the scene, state my research aim and objectives and address the theoretical and conceptual perspectives that guided this study. Finally, I give an overview of the structure of the thesis.

1.2 Background

A healthy work environment encourages and influences the physical, mental and socio-economic behaviours of its employees (Waddell and Burton 2006). It supports the wellbeing of their families and benefits not only the local community but also the country as a whole by reducing the need to attend health services (Tehrani et al. 2007). Physical and mental wellbeing is

determined by various factors such as genetic inheritance, environment, age, access to health care or lifestyle choices (Briggs et al. 2016; Crawford et al. 2020; Public Health England (PHE) 2020).

Although improvements in public health and medical treatments have controlled infectious diseases and increased life expectancies over recent decades, the burden of chronic conditions is still growing worldwide (Public Health England 2020a). In the past 10 years in the United Kingdom (UK), the prevalence of chronic musculoskeletal and mental health conditions, like back pain and depression, has increased (Versus Arthritis 2021). In 2017, CMSDs globally accounted for the second-highest number of years lived with disability, with an estimated increase of 38.4% since 1990 (Kyu et al. 2018). In addition, data from the latest European Union (EU) annual survey report demonstrated that musculoskeletal disorders (MSDs) (including chronic and work-related MSDs) are one of the major health issues at Europe's workplaces as, for example, one out of five workers in 2018 reported a CMSD (de Kok et al. 2019).

However, it is important to understand that the category of CMSDs comprises around 290 diagnoses (Briggs et al. 2016), whereas the Global Burden of Disease (GBD) report includes only a few of them (e.g. hip and knee osteoarthritis, rheumatoid arthritis, back and neck pain or gout). Consequently, the GBD report's evaluation of the burden of CMSDs discussed above is likely to be underestimated (Blyth et al. 2019; Woolf and Akesson 2020). It is also globally recognised that the incidence of CMSDs has increased in comparison with other chronic conditions that have remained stable over the past decade, e.g. ischaemic heart disease, stroke or chronic obstructive pulmonary disease (Public Health England 2020a; Institute for Health Metrics and Evaluation 2018).

The Arthritis Foundation (2019:10) reported that “*worldwide health care services will be facing severe financial pressures in the next 20 years due to the growth in the number of people affected by musculoskeletal (MSK) diseases as they account for more than one-half of all chronic conditions in people older than 50 years old*”. Still, the severity and burden of CMSDs remain under-recognised and under-resourced as the mortality rates associated with them are low in comparison with other health conditions (Woolf and Akesson 2020; Blyth and Noguchi 2017; Briggs et al. 2016).

In addition, the workforce has become remarkably diverse due to the integration of older employees, migrants and the substantial number of females entering the labour force (EU-OSHA 2013; Office for National Statistics (ONS) 2021a; ONS 2015; Grant 2011). The prevalence of MSK conditions (including CMSDs) remains high in those over the age of 50 regardless of the type of complaint (Fejer and Ruhe 2012; Wilkie, Tajar, and McBeth 2013). For example, among 50 to 64 years old, the employment rate last year was highest in the ‘white other’ ethnic group (79%), compared to British (ONS 2021a).

Population ageing is a global phenomenon that generates an economic imperative for people to remain at work for longer (Altmann 2015; ONS 2015; Age UK 2019a). In the past 50 years, the percentage of female workers has also increased by 19.2% and, as of January 2021, more than two-thirds (72%) of women aged 16–64 are employed in the UK (ONS 2021). Specifically, over the last 30 years, the percentage of women workers aged 60-64 increased from 17.7% to 40.7% and the percentage of women aged 55-59 increased from 48.6% to 68.9% (Department for Work and Pensions (DWP) 2015). Published research has highlighted that women were more likely to report MSK pain than

men (Wilkie, Tajar, and McBeth 2013). These demographic changes have prompted the UK government to change retirement policies, delay the pensionable age and extend working years (DWP 2017a; Lewis et al. 2019). However, the movement towards sustained employability poses many challenges to the ageing population that may not be in line with the intentions of political reforms.

During the last decade, governmental and professional bodies have published reports that target the musculoskeletal health and wellbeing of older workers and discuss ways to extend working lives and improve the labour market performance (DHSC and DWP 2008; Phillipson and Smith 2005; Versus Arthritis 2019; DWP 2020a). At the same time, a variety of models and recommendations have aimed at shifting responsibility for health promotion to the employer (National Institute for Health and Care Excellence (NICE) 2015; NICE 2019; Department for Work and Pensions 2015b; DWP and DHSC 2020). However, it is still uncertain if employers and managers are sufficiently informed or motivated to support employees with CMSDs in staying healthy at work (Koma, Bergh, and Costa-Black 2019; Taylor and Daniel 2015; Coole et al. 2014).

Studies that aim to improve and manage musculoskeletal health in the workplace remain relatively overshadowed by prevention or return-to-work strategies (Andreas 2015; van Eerd et al. 2015; Prall and Ross 2019; Franche et al. 2005; Grant et al. 2019a; Jezukaitis and Kapur 2011). As some strategies may overlap, previous research has criticised the tendency to distinguish between employees working and those currently out of work (Young et al. 2005), that is, differentiating between those in transition and those who have

achieved sustained employment. Still, most research on chronic conditions focuses on the return-to-work process, which happens early in a transitional stage (Hjærtström et al. 2018). Therefore, the suggested strategies may not be sufficient or appropriate for those who need a sustainable management plan in the workplace.

1.3 Chronic musculoskeletal disorders in the societal context

Chronic musculoskeletal disorders continue to be a leading cause of long-term pain and disability worldwide, affecting both the individual and the society (European Musculoskeletal Health Surveillance and Information Network and Executive Agency for Health and Consumers 2014; Parsons and Symmons 2014; Briggs et al. 2020). According to the International Classification of Functioning, Disability and Health (ICF) of the World Health Organization (WHO 2001:213), disability is defined as:

An umbrella term for impairments, activity limitations and participation restrictions, referring to the negative aspects of the interaction between an individual (with a health condition) and that individual's contextual factors (environmental and personal factors).

Similarly, the United Nations Convention on the Rights of Persons with Disabilities in Article 1 (2016) states that the definition of disabilities includes:

Those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others.

In addition, the definition of CMSDs includes a range of inflammatory and degenerative conditions and syndromes that last more than 12 weeks affecting the muscles, tendons, ligaments, joints, peripheral and spinal nerves, and supporting blood vessels (Silverstein and Clark 2004; Schneider and Irastorza

2010; WHO 2016; Crawford et al. 2020). The terms 'chronic musculoskeletal conditions', 'long-term musculoskeletal conditions' and 'chronic musculoskeletal disorders' are used interchangeably in the literature. However, the term 'chronic musculoskeletal disorders' will be used in this thesis.

Chronic musculoskeletal disorders cover a variety of conditions, including chronic back and neck pain, chronic upper and lower limb disorders, as well as rheumatic diseases, degenerative conditions or non-specific pain syndromes (EU-OSHA 2010; National Academies of Sciences and Medicine Engineering 2020). Although these complex conditions share some common characteristics such as pain, stiffness or reduced mobility (Schwarzkopf et al. 2008), they can also present with fatigue and flare-ups (WHO 2021; NICE 2017; NICE 2020a; NICE 2014), which make management difficult for clinicians, employers and employees. For example, flare-ups represent a period of increased disease activity or worsening of symptoms where pain may fluctuate within and across days without any warning (Khanom et al. 2020). Due to the intermittent nature and diverse symptoms, CMSDs may go unnoticed in the workplace that is, they are "non-visible" (UK Government 2020).

Chronic musculoskeletal disorders can also be characterised by a generally slow progression that requires continuous and long-term management (WHO 2021). The causes are multifactorial and they are usually associated with particular tasks, such as lifting or repetitive movements, and other factors, such as stress, age, gender and genetic susceptibility (de Kok et al. 2019; Bongers et al. 2006; Punnett and Wegman 2004; Aas et al. 2011a; Copsey and Schneider 2018). Osteoarthritis and back pain are among the most common causes of long-term musculoskeletal pain in the UK (Versus Arthritis 2019) and contribute

to pain, frailty and disability which, in turn, challenge sustainable employability (Crawford et al. 2020; Caponecchia et al. 2020; Reeuwijk et al. 2017).

Furthermore, people with CMSDs may develop more than one chronic condition (known as co-morbidity or multimorbidity) in their lifetime, such as cardiovascular diseases, diabetes or depression (Loftis et al. 2017; Williams et al. 2018). For example, Public Health England (2021) indicated that 13.3% of those aged 18 and over last year reported at least two chronic conditions, of which one is a CMSD. Similarly, Age UK (2019a) indicated that 58% of those over 50 had a chronic condition and 25% of those over 60 had two or more chronic health problems (including CMSDs), and these statistics are expected to increase in the future as the population ages (Divo, Martinez, and Mannino 2014; Age UK 2019b).

Research showed a higher prevalence of musculoskeletal morbidity, impairments, and rates of sickness absence among women with MSDs (including CMSDs) as for example, women are more likely to report symptoms compared to men (Barbosa, Assunção, and de Araújo 2013; Otto, Emery, and Côté 2019; Lima and Coelho 2021; Wilkie, Tajar, and McBeth 2013). There are both biological and psychosocial underlying mechanisms for this gender difference (Fillingim 2017), but this discussion is beyond the scope of this thesis. Other socioeconomic factors have been identified that impact the experience of working with a CSMD and also highlight gender differences, such as the occupational setting, family responsibilities and working patterns (Coutu et al. 2021; Gjesdal, Bratberg, and Mæland 2011). Ageing and multimorbidity demonstrate the complex needs of the ageing workforce. While working may confer financial, psychological and physical benefits, older employees with

CMSDs may struggle with the demands of their work, the ageing process and the management of multimorbidities (Attia and Edge 2017; Altmann 2015; Edge, Cooper, and Coffey 2017; Andersen, Jensen, and Sundstrup 2020).

Although exact data on the prevalence of self-reported MSDs (including CMSDs) are difficult to obtain across different industries in the UK, there is a clear indication that some industries have a higher prevalence of MSDs than others (Health and Safety Executive 2020; de Kok et al. 2019). This finding is likely to be related to the nature of the work, for example, agriculture, construction and healthcare reported the highest rates of MSDs in the workplace (Health and Safety Executive (HSE) 2020; de Kok et al. 2019). As some industries employ a higher percentage of people over the age of 50, for example, healthcare, education and manufacturing (CIPD 2019a), it is important to understand better the health status of older workers and their ability to complete work tasks within the context of diverse working settings.

The labour force over the age of 50 in the UK in 2019 was nearly a third (10.4 million) of the total UK workforce (Centre for Ageing Better 2019) and it is projected to expand even more (ONS 2019a). Besides, the proportion of over-50s in the workforce has increased from 21% to 32% between 1992 and 2019 (CIPD 2019a). Although ageing does not inevitably generate illness and disease (HSE 2011), it is widely accepted that work ability and functional capabilities (e.g. joint mobility, muscle strength and reaction time) change with age (Minna and Mika 2012; Haas et al. 2005; Paterson and Warburton 2010). Increasing life expectancy combined with people retiring at an older age will increase the prevalence of CMSDs and other chronic conditions. These demographic changes may impact work performance and increase sick leave rates, demand

for services, and reduced productivity. Until recently, the definition of an older worker had not been established (Depergola and Manuti 2013). In studies focused on labour market participation, the “older worker” is usually identified as aged 50 or 55 and above (UNISON 2017; McCarthy et al. 2014; Depergola and Manuti 2013; CIPD 2015). Similarly, for this research older workers were defined as those individuals aged ≥ 50 years.

In the past decade, MSDs (including CMSDs) have been the leading cause of pain and disability and the biggest cause of sickness absence, sickness presence and productivity loss in the UK (Public Health England 2021). For example, 7.8 million days (19,7%) were lost due to musculoskeletal conditions (as well as CMSDs) in 2019 with the highest rate among those aged 50 to 64 years (2.6%) (ONS 2019b). However in 2010-2021, the coronavirus (COVID-19) pandemic affected the latest sickness absence data (WHO 2020). New measures such as furloughing, home-working and shielding reduced the typical causes of absence in the workplace and changed the nature of some occupations (ONS 2021b). The Office for National Statistics (2021b) reported that musculoskeletal problems were the 3rd main reason in 2020 for being on sick leave (15.4%) after minor injuries, common cold and COVID-related symptoms. However, this change is related to the pandemic rather than epidemiological change or how CMSDs are managed. Furthermore, as the data collection of this study was conducted and completed before the COVID-19 outbreak, the subsequent and as yet unknown effects of COVID-19 will not be included in the report and discussion of findings.

In the workplace context, chronic musculoskeletal disorders present a challenge due to the associations between sick leave rates (known as

absenteeism), 'presenteeism' and reduced productivity levels (Blyth et al. 2019; Briggs et al. 2020). Presenteeism has been defined as the practice of coming to work when feeling unwell (Johns 2010; Garrow 2016; CIPD 2016; Whysall, Bowden, and Hewitt 2018). However, there has been considerable interest in exploring more comprehensively this complex and difficult-to-quantify phenomenon (Johns 2010; Freeling, Rainbow, and Chamberlain 2020; Garrow 2016; Skagen and Collins 2016; Hammond et al. 2020; Ruhle et al. 2020). For example, in a recent position paper, Ruhle et al. (2020) discussed the emerging developments in the field of presenteeism, its multifactorial nature, and the difficulties of reaching a consensus on a definition of presenteeism to the independent research being conducted.

Research has also highlighted that presenteeism is more prevalent and costly than sickness absence (NICE 2019; Arthritis Research UK 2017; Holland and Clayton 2020; DHSC and DWP 2017; Bergström et al. 2020). A recent large survey of over 1000 organisations (across all sectors and organisation sizes) estimated that 89% of organisations had observed presenteeism in the last year (Chartered Institute of Personnel and Development (CIPD) 2020). However, resourceful environment initiatives such as flexibility in the job role, work-task adjustments or the opportunity to change the nature of work may enable an employee to work productively within the restrictions of their health condition (Xanthopoulou et al. 2007; Bakker and Demerouti 2017; Bergström et al. 2020). Bergström et al. (2020) explored the relationship between a supportive work environment and the impact of presenteeism on health. The authors used data from the 'Swedish Longitudinal Occupational Survey of Health' study (Magnusson Hanson et al. 2018), where they selected those

employees who presented at work when unwell. Their results showed that employees who reported more available job resources or lower job demands presented better subsequent general health than those with the same amount of presenteeism but with less job control/support or higher demands at work.

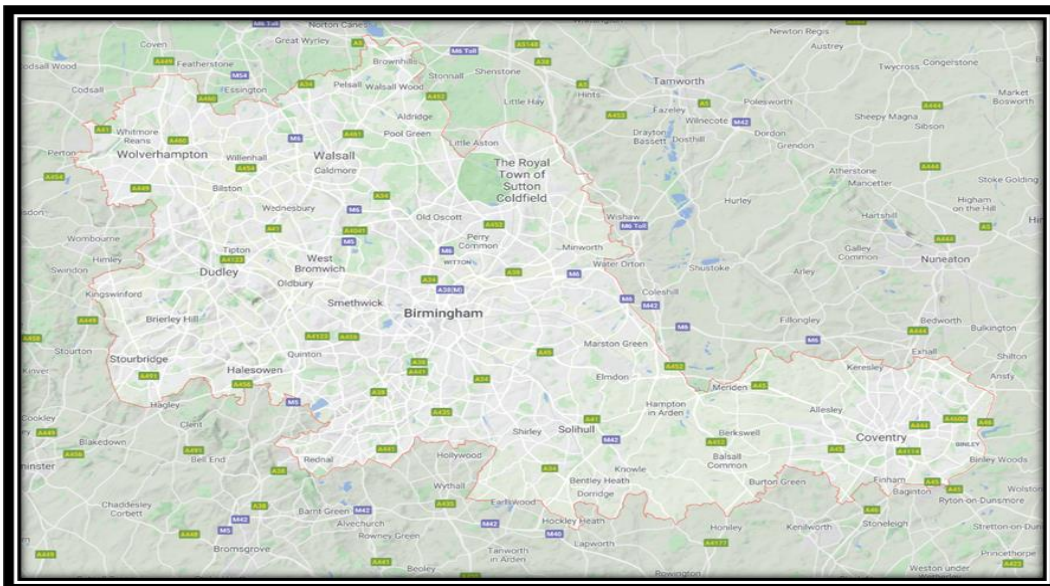
Lastly, poor musculoskeletal health results in significant costs not only for the older worker but also for the employer, the health service, and the wider economy (Versus Arthritis 2019). Although it is difficult to define and compare data in primary and community settings (Burgess et al. 2020), estimates for different CMSDs suggest a significant economic impact. For example, the direct cost to the National Health Service (NHS) of treating osteoarthritis (OA) and rheumatoid arthritis (RhA) in 2017 was £10.2 billion and the cost of workdays lost due to these conditions was estimated as £2.58 billion in the same year (Versus Arthritis 2019). These costs associated with OA and RhA are underestimated as they do not include the cost of presenteeism and other indirect costs such as loss of employment and early retirement, private healthcare or transport costs to attend health care (Ingram and Symmons 2018).

1.4 Setting the scene: West Midlands

This study was conducted in West Midlands in the UK (Figure 1.1). West Midlands is one of the largest urban areas in the UK and can be considered to be representative of the working population of the country as a whole. It is the metropolitan county of central England that consists of the cities of Birmingham (England's second-largest city) and Coventry, and the boroughs of Dudley, Sandwell, Solihull, Walsall, and Wolverhampton (The Editors of Encyclopedia

Britannica 2013). The region has more than 5.8 million citizens and covers an area of about 13,000 km² (European Commission 2019). West Midlands is a major part of the UK economy, generating £99 billion of the gross value added, which equals 5% of the UK output (Department for Business Energy and Industrial Strategy 2019). It is a large and diverse area that represents around 2,823,000 employees and 259,470 enterprises (Official Labour Market Statistics 2019).

Figure 1.1: West Midlands, UK (Google Maps 2021)



The most common sectors of employment for women in the West Midlands are healthcare, retail and education, whereas for men, it is manufacturing and construction (ONS 2019b). Although manufacturing represents a higher proportion than the rest of the country (10.7% versus 7.4%), in general, the industrial groupings in the area are proportionally similar to the total workforce jobs in the UK (Official Labour Market Statistics 2019). A comparison of a range of health indicators in the West Midlands varies

compared with the country's average, for example, people in Coventry and Birmingham have generally worse health compared with other areas in England, but people in Warwickshire or Staffordshire are similar to the UK average (Public Health England 2020). Besides, significantly more people (20%, CI 95% 20.8-21.3) in the West Midlands reported having a CMSD compared with the average of people in England (16.9%) (Public Health England 2020b). The high incidence of CMSDs in the West Midlands meant that it was an appropriate area in which to conduct this study (HSE 2017; CIPD 2016). Lastly, West Midlands is conveniently located for the researcher who lives and works in Coventry.

1.5 Chronic musculoskeletal disorders in the political context

In the United Kingdom, the legislative framework that applies to musculoskeletal disorders focuses primarily on the general health and safety provisions (i.e. risk assessment at work) contained in the *Health and Safety at Work Etc. Act 1974*, the *Health and Safety (Miscellaneous Amendments) Regulations 2002*, the *Manual Handling Operations Regulations 1992* and the *Management of Health and Safety at Work Regulations 1992*. However, there is no specific legislation that addresses prevention and management of work disability and sick leave and how these issues are addressed depends on consultations, initiatives, independent reviews and EU campaigns (Department for Work and Pensions 2017a; Department of Health and the Department for Work and Pensions 2017; EU-OSHA 2020; EU-OSHA 2019). These resources offer general recommendations on health and safety issues, sickness absence and ergonomics assessments in the workplace and aim to raise awareness, support employers, and guide the development of workplace guidelines.

Other government schemes, charities, and organisations also encourage employers to support the health of the workforce (Department for Work and Pensions 2017b). Some schemes offer financial help supporting disabled workers, for instance, the 'Access to Work' grants that are available for employers to finance the purchase of special work equipment and help employees to overcome work-related obstacles (Powell 2020; Clarke 2015). The NICE guidelines (2015) entitled 'Workplace Health: Management Practices' encourage managers to extend working lives and improve resources for employees in the labour market, for example, involvement of the line manager in assisting employees in managing health issues in the workplace and in supporting employees' health and wellbeing. Government schemes (HM Government 2010) have also been introduced to assist employees with health conditions to regain or remain in employment, but these schemes have not achieved the same success. For example, the 'Fit for Work' scheme enabled employers, managers and general practitioners to refer individuals who have been off sick from work to occupational health services for assessment (DWP 2016). This service was intended to complement the existing occupational health provision, but an evaluation of government active ageing policies showed very low referral rates (Gloster, Marvell, and Huxley 2018) and the service ended in 2018 after less than three years of operation.

Currently, the UK government is particularly concerned with sustaining older employees in the workforce (Black and Frost 2011; Black 2008; Department for Work and Pensions 2017b; Department for Work and Pensions 2020a; Department of Health and the Department for Work and Pensions 2017). The main focus is to enable them to re-enter employment or to avoid a

potential early departure from the workforce while keeping them active, healthy and productive for a longer period (Hazelzet et al. 2019; Schultz et al. 2007; van der Klink et al. 2016; DWP 2014). Sustainable employability has been defined (van der Klink et al. 2016:74) as a concept whereby:

Workers throughout their working lives can achieve tangible opportunities in the form of a set of capabilities. They can enjoy the necessary conditions that allow them to make a valuable contribution through their work, now and in the future, while safeguarding their health and welfare. This requires, on the one hand, a work context that facilitates this for them and on the other, the attitude and motivation to exploit these opportunities.

A range of initiatives has been developed with the long-term aim of improving and sustaining working lives (Department of Health and the Department for Work and Pensions 2017; Department for Work and Pensions 2017b; Department for Work and Pensions 2014). For example, in 'Improving Lives: The Future of Work, Health and Disability' (DHSC and DWP 2017), the government committed to improving musculoskeletal services by collaborating with research centres and encouraging healthcare professionals to discuss work issues with their clients. However, government policies have been criticised for focusing primarily on recruitment and employability and largely ignoring the importance of health at work (Foster 2018; Benstead 2019; Bartys, Edmondson, and Burton 2019). A healthy work environment is essential to increase work ability, reduce sick leave rates and enhance mental stimulation and physical benefits for older employees with CMSDs (EU-OSHA 2018).

The concept of work ability originated in the Nordic countries in the 1990s due to the ageing of the workforce (Ilmarinen 2019). It commonly refers to people's ability to be healthy, productive and perform their working role well

while balancing resources and work demands (Stuer et al. 2019; Lederer et al. 2014; Ilmarinen 2009). Tengland (2011:283) has described work ability as ‘specific’ or ‘general’ depending on if it is related to the present job or to a general ability to perform some kind of work (Nordenfelt 2008; Tengland 2011). The latest definition (Tengland, 2011:283) captures the complexity of the concept:

A person has specific work ability if (and only if) the person has (at least one relevant subset of) the manual, intellectual and social competence, together with the physical, mental and social health (executive capacity) that is required for competence, and has (some set of) basic occupational virtues and the relevant job-specific virtues (if there are any) that are necessary to reach the work-related goals (and perform the work-related tasks), with normal quality standards, that can typically be reached (or performed) by someone in the profession, given that the (physical, psychosocial and organisational) environment is acceptable (or can easily be made acceptable), and if the person can stand the job.

Although the government’s guidance to enhance work ability (DWP 2020b) is informative and encourages organisations to take action, it may not be specific enough to support a sustainable ageing workforce (Robertson 2017). Lack of adjustment latitude at work (possibilities to temporarily adjust work-demands to disease) has shown decreased opportunities to stay at work and increased sick leave rates (Nordström et al. 2014; Hultin et al. 2013; Johansson, Lundberg, and Lundberg 2006). Although research has highlighted that health is the most important factor affecting the retirement intentions of older workers (Andersen, Jensen, and Sundstrup 2020), still one in eight employees are forced to stop working before the normal state pension age (SPA) due to ill-health (Trades Union Congress et al. 2016). Creating a sustainable work environment requires a holistic approach that considers personal, disease and work-related factors while taking into account the political

context, e.g. government policies on retirement, health and employment (EU-OSHA 2019).

1.6 State pension changes and the impact on CMSDs

Central to the political context of this study are the SPA changes implemented by the government in response to the changing demographics and the challenges that these impose on the ageing workforce. The changing demographics have generated a need for people to remain at work to older ages. In most EU member states, the retirement age has been raised from 62 to 67 years, although it is expected that it will rise again (Eläketurvakeskus 2016). Following pressure from Europe to address gender SPA differences, the UK government established the equalisation of the SPA to 65 for both genders (Pension Act 1995). Almost a decade later, the government passed a second *Pension Act* (2007) that increased the SPA to 66 for both men and women by 2026, then to 67 by 2036 and finally to 68 by 2046. However, in 2011, the UK coalition government accelerated the SPA equalisation timetable by passing another *Act* (Pension Act 2011) as a response to the increasing longevity of the older population and the projected future cost of the state pension. As a result, the SPA was raised to 66 by October 2020, and the most recent *Pension Act* (2014) further increased the SPA to 67 by April 2028. A review of the SPA regulations is expected in July 2023, at which time the government will confirm when the SPA will increase to 68.

The new policies have been implemented to maximise employment as the government removed the default retirement age of 65 and legislated to remove the age and disability discrimination in the workplace (Pensions Act

2007; Pensions Act 2014; Pensions Act 2011). Foster (2018:125), who critically reviewed the UK government policies since 2014, stated that abolishing the mandatory retirement age may promote extending working lives. However, the limited early retirement options and the disregard for wellbeing issues could cost employees' quality of life at work. According to Foster (2018), the government needs to consider all subgroups within the ageing workforce and provide flexible solutions to support older employees towards sustainable employment. It is becoming clear that the government has to reflect on how the SPA changes will impact the increasing number of older workers and specifically explore the available resources and the challenges posed for those individuals with CMSDs.

The UK system of support for pensioners has historically been complicated by components being repeatedly tinkered with or reformed over time (Bozio, Crawford, and Tetlow 2010). The government claimed that the current changes in SPA aimed to reduce poverty in old age and provide younger generations with a solid base for saving and retirement planning (DWP 2020a; Bozio, Crawford, and Tetlow 2010). However, the SPA changes were instigated primarily due to concerns about the effect on public finances of increasing longevity in the older UK population and low fertility statistics (Cribb, Emmerson, and Tetlow 2016). The increase in SPA is linked with the higher prevalence of chronic conditions and multimorbidities which, in turn, implies an increased need for social services and a long-term care infrastructure to support the ageing process (Eccleston 2019; ONS 2013). Kingston et al. (2018) explained that the prevalence of multimorbidity between 2015 and 2035 is estimated to increase. By the time people reach their 65th birthday, it is

projected that more than 50% will have at least four long-term conditions and two-thirds will also have at least one mental condition (e.g. dementia, depression, or other cognitive impairment) (Kingston et al. 2018). Therefore, as Divo, Martinez, and Mannino (2014) suggest, it is a moral, economic, and legal imperative to prevent morbidities where possible and provide focused support for older employees with long-term and progressive conditions in the workplace.

Authors in different European countries have explored the association between CMSDs and early retirement (de Boer et al. 2018; Boonen et al. 2018; Laires and Gouveia 2014; Laires et al. 2018; Li Ranzi, D'Errico, and Costa 2013). Similarly, in the UK, Brown and Vickerstaff's (2011) qualitative study provided an insight into health and retirement for those over the age of 50. The authors interviewed 96 employees to explore how people made decisions to remain at work or take early retirement. The findings suggested that exiting employment can be influenced by different parameters, including health, financial security, ageing and job satisfaction. Participants agreed that health was a major factor influencing their decision-making and explained that it was important to retire while they were still healthy. The authors, however, suggested that the government's explanations about SPA changes were not adequate and that: "*The government attempts to persuade people to change their retirement timing will not succeed if they rely on convincing people only of the hard fact that we are on average living longer*" (Brown and Vickerstaff 2011:546).

The impact of SPA on health and quality of retirement life for different groups in each country needs to be examined in the context of the different socio-economic factors and policies. For example, a Portuguese study (Laires

et al. 2018) used a subgroup of older employees with OA and examined the association of the condition with early retirement and its costs. The authors found a positive relationship between knee OA and early retirement from work and estimated an annual productivity loss¹ of about €656 million, amounting to 0.4% of the 2013 national GDP. Therefore, exiting employment on health grounds may be a preferable and legitimate option for those with a CMSD. However, taking early retirement may not be a viable choice for many in the UK as they will not be entitled to take their pension until they are 67 or 68. It is important to note that, in comparison to other countries within Europe, only the UK government has increased the SPA without enabling people to take a reduced pension or claim their pension before they reach the retirement age (Lain 2016).

1.7 Chronic musculoskeletal disorders and women

The literature suggests that in the UK, the SPA changes have disadvantaged older women as changes were occurring too fast, and there has been insufficient notice and accessible information (Carrino, Glaser, and Avendano 2020; Trades Union Congress et al. 2016; Thurley and McInnes 2020; Pensions Policy Institute 2019; Holman, Foster, and Hess 2020). In total, 1.1 million women in the UK born between 6 April 1950 and 5 April 1953 had their SPA increased due to the first *Pension Act 1995* (House of Commons and Work and Pensions Committee 2016). Women expressed that they were not adequately informed and, in their opinion, government information over the past

¹ This method estimates productivity by valuing healthy time lost due to OA using market wage rates, which can be viewed as the loss of an investment in a person's human capital (Becker 1975)

decade had been confusing and poorly disseminated (UK Government and Parliament 2016; Women Against State Pension Inequality 2015). Women usually compromise their careers when the needs of children and other family members conflict with work, and they are usually paid significantly less than men (Gignac et al. 2014; ONS 2018a). Therefore, the accelerated SPA changes may have affected their financial capacity and pension contributions and, in reality, limited their access to early retirement options (EU-OSHA 2016; Sharma, Chakrabarti, and Grover 2016; Heise et al. 2019).

In the past decade, these concerns have been expressed by actions in a larger societal context. The Women Against State Pension Inequality (WASPI) campaign in 2015 is an example of one such action. The WASPI organisation submitted a petition in 2015 entitled *Fair Transitional State Pension Arrangements for 1950's Women* that expressed their concerns that SPA increases were occurring too fast and with insufficient notice (UK Government and Parliament 2016). The Work and Pensions Committee held a debate in parliament and, after careful consideration and various consultations, responded in the *Communication of State Pension Age Changes* (2016) report. The Work and Pensions Committee (House of Commons and Work and Pensions Committee report 2016:22) recognised the issues raised, however, they took a different position stating that:

We will never know how many women did not know, or could not be reasonably expected to know, that their state pension age was increasing... while the last and current governments have done more to communicate state pension age changes than their predecessors, this has been too little too late for many women, especially given increases in the state pension age that have been accelerated at relatively short notice. Many thousands of women justifiably feel aggrieved.

Despite recognising the impact of the SPA changes on older women in the UK, reversing them or extending the timeline was not considered to be an option, since such a “policy was prohibitively expensive” and would cost around £30.6 billion (House of Commons and Work and Pensions Committee report 2016:22).

In addition to the issues of managing a changed SPA, managing CMSDs may become more difficult and stressful for women, particularly those who have multiple responsibilities (de Kok et al. 2019). In a recent study, Carrino, Glaser, and Avendano (2020) investigated the impact of raising the SPA on women's health in the UK. The authors analysed the data from seven annual UK ‘Understanding Society’ surveys (2009–2016) on the health status of 3,351 employed women aged 60–64. They employed three validated measures of mental and physical health to compare the status of those aged either above the SPA (i.e., not affected by the reform) or below the SPA (affected by the reform). The results indicated that being below the SPA led to a significant increase in General Health Question depression scores ($P < 0.05$) and a decline in the SF-12² mental wellbeing score (not statistically significant score). The results suggested a negative impact on mental health especially for women in the lower socio-economic groups and those employed in highly demanding occupations. However, there are no studies on how women affected by the SPA changes are managing a CMSD in the workplace.

1.8 The use of a theoretical framework and models to guide the study

² SF-12 is a self-reported outcome measure assessing the impact of health on an individual's everyday life

Sustainable employability is connected to work ability and disability management (Vornholt et al. 2018; van der Klink et al. 2016; Tengland 2011; Costa-Black, Feuerstein, and Loisel 2013). Different internal and external factors influence work (dis)ability, such as values, attitudes, and legislative systems (Vornholt et al. 2018; Costa-Black, Feuerstein, and Loisel 2013). Work (dis)ability is usually characterised by increased time off work, reduced productivity, or working with functional limitations as a result (process or outcome) of either traumatic or non-traumatic clinical conditions (Schultz et al. 2007; Krause et al. 2001). Therefore the degree of (dis)ability experienced by an ageing workforce is not only affected by the ageing process and the CMSD but also by the work context and other environmental factors, for example, work demands and the work environment confronting the employee (Vornholt et al. 2018; Lederer et al. 2014).

Plano-Clark and Ivankova (2016:12) created a theoretical framework to assist the novice MMR researcher “*in understanding and navigating the important issues of mixed methods research and help [him/her] connect the available theoretical and methodological writings to the practical issues that occur when using mixed methods research*”. The use of such a framework is necessary to guide a study, explicitly describe the design used and form a foundation for the analysis (Creswell 2015:5). Plano-Clark and Ivankova (2016) discuss three different examples of how theory can be used in MMR: “*as an overarching stance for approaching the topic, deductively testing theory, and inductively generating theory*” (Plano-Clark and Ivankova 2016:203). The first

example represents how the Socio-Ecological Framework (SEF) or Model³ was used in this MMR study. The SEF “*recognises and explains the interwoven dynamic relationships that exist between various individuals and environmental factors, such as personal, interpersonal, organisational, community, and societal contexts*” (Plano-Clark and Ivankova 2016:14). In this way the SEF is congruent with the unique characteristics of MMR and it captures the “*complexity and nuances of mixed methods and can serve as a guide to navigate and explain the field of MMR*” (Plano-Clark and Ivankova 2016:14-15).

I found the SEF particularly useful in framing my research process by taking into consideration the relevant theoretical, professional, and personal perspectives of older employees working with CMSDs. It informed my understanding of the MMR approach and assisted me in making decisions about the choice of MMR design. A full explanation of the conceptualisation and justification of the different contexts outlined in the framework is provided in Chapter 4. Two theoretical models, the ‘Arena of Work Disability Model’ (Loisel et al. 2005), and the ‘Work Ability House Model’ (Ilmarinen and Ilmarinen 2015), were instrumental in advancing my understanding of the management of CMSDs in the ageing workforce and helped me to tailor the study aim and objectives and identify connections and raise questions within the data collection and analysis phases and to facilitate interpretation of the findings (Passey 2020; Crawford 2019).

The Arena of Work Disability Model (Figure 1.2) represents the context of the worker with a disability as embedded in individual, organisational and socio-political structures, e.g. personal factors, the workplace and the

³ The authors use the words ‘framework’ and ‘model’ (SEF) synonymously in their book

compensation system (Loisel 2005; Costa-Black, Feuerstein, and Loisel 2013; Loisel et al. 2005). These structures surround the disabled worker and interact with each other, for example, the healthcare system, the workplace system, as well as insurance companies, which may influence the degree to which the disability impacts the individual in the workplace (Jordan et al. 2015). Each system includes various stakeholders who can mutually communicate or collaborate (e.g. worker, union representative, employer, insurer). The Model clarifies that stakeholders may have different viewpoints and priorities, which may result in different interpretations and actions in response to the relevant process (e.g. prevention, management or RTW). The Arena of Work Disability Model has been used mainly for work disability prevention or return-to-work; however, the healthcare and insurance systems are not as involved in the management process. The Model was chosen for this research as it recognises how a diversity of factors associated with specific legal and cultural systems may influence an individual's decision to participate in work (Loisel et al. 2005).

Figure 1.2: The Arena in Work Disability Model (Loisel 2005)
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In addition, the Work Ability House Model (Figure 1.3) (Ilmarinen and Ilmarinen 2015) aims to support a longer employment career and enhance and promote the quality of employment by examining powerful relationships between factors related to the occupational, socio-political and cultural contexts that influence an individual's work and personal life (Figure 1.3). The Work Ability House Model is *“an evidence-based, comprehensive and systematic model for developing workplaces that facilitate better and longer worker careers”* (Ilmarinen and Ilmarinen 2015:135). The Model comprises a house with four floors. The three lower floors of the house relate to the employee's resources: health and functional capacities (e.g. physical and mental),

competence (e.g. training and knowledge), and values, attitudes and motivation (e.g. job security and finances) (Ilmarinen 2009). The fourth floor relates to aspects of work, work community and leadership, for example, it may include the manager's role and their ability to provide resources.

Moreover, the staircase depicted in the house indicates that all floors of the house interact with each other, and therefore, the Model highlights that work ability depends on the balance between the parameters affecting work and the available resources for the worker. The Model also includes influences outside the work ability house, for example, family and members of the community who the employee can see from the third-floor balcony of the house (Gould et al. 2008; Ilmarinen 2009). This Model complements the *Arena of Work Disability* Model as it includes other divergent perspectives like competence, health, other qualifications, family, occupational virtues, attitudes and values (Nordenfelt 2008; Tengland 2011).

Both the *Arena of Work Disability* Model (Loisel 2005) and *Work Ability House* Model (Ilmarinen and Ilmarinen 2015) provide a solid theoretical foundation that facilitates the exploration of sustainable employability in older workers as they are built on communication and collaboration between the structures and the different systems influencing work-life (Costa-Black, Feuerstein, and Loisel 2013; Lederer et al. 2014; Loisel 2005; Ilmarinen and von Bonsdorff 2015). The contribution of those models to the interpretation of the findings of this research will be discussed in more detail in the discussion chapter (Chapter 9).

Figure 1.3: An illustration of the Work Ability House Model taken from the latest published version (Ilmarinen 2019)

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1.9 My interest in this research area

I qualified in Greece as a physiotherapist in 2010 from the International Hellenic University in Thessaloniki. My interest in occupational health began in my final year as a student when I was introduced to this speciality during an elective module on ergonomics. After graduation, I worked clinically in a private practice which was primarily musculoskeletal and a few years later, I moved to the UK to learn more about musculoskeletal health and study at a postgraduate

level. While studying for an MSc, I also worked in a private musculoskeletal practice that offered ergonomic assessments and treatment plans to a variety of employees in a number of different workplaces. I worked mainly with older employees with both acute and CMSDs and, as a result, began to understand the complexity of treating employees with CMSDs and the obstacles associated with environmental and social factors in the workplace that they experienced and how these influenced the way they managed the CMSDs in the work context. However, it was a personal experience that primarily motivated me to study and explore the management of CMSDs in the workplace.

While I was working as a physiotherapist, I was also dealing with chronic pain myself. Although only in my 20s, I had already been experiencing chronic neck pain for 10-years. During those years, I had managed my condition conservatively with exercises and physiotherapy modalities. In this way, I was able to control flare-ups and hide any difficulties at work. I took pride in not taking any days off work, working long hours and weekends, even on the days that I did not feel well. I consistently pretended that I was fine. However, in 2013-2014 there were a lot of occasions when I was not able to work, when I was forced to leave work and to take sick leave. I found this very distressing. The pain had become excruciating, and I was losing the strength in my arms. After a number of consultations in both Greece and the UK, the decision was made to have neck surgery if the chronic pain and neurological changes did not improve within a year. Subsequently, I had to reduce my working days and hours as physically I was not able to work as before. This was a difficult time for me as I refused to accept that I had lost my ability to work, and I was stressed because my employer did not offer sick leave. I decided to change the nature of

my work and to leave clinical practice. Thankfully, I was fortunate to be offered the position of Assistant Lecturer in Physiotherapy at Coventry University.

Once I started my new role, the neurological symptoms improved, and I was able to manage my chronic neck pain better. Despite these improvements, I did have, in the end, a vertebral fusion surgery. However, I felt truly fortunate that I was working in an environment where my work colleagues were empathetic and where I had paid sick leave. My employer also provided me with a new office chair and a standing desk to support my post-surgical needs.

It was clear that my chronic condition and the surgery had an impact on my future employability as a practising physiotherapist. In addition, after the changes in the state pension age, I reflected on how different my current and future employment and financial situation might have been without the availability of paid sick leave and other benefits. This reflection raised a number of questions: What would have happened if I had not changed my job role? Would I be healthy when I reach my retirement age at 68? Would my musculoskeletal health deteriorate? Would I be able to work until that age or be forced to leave employment early?

In addition, reflection on my experience of a CMSD and employment situation lead to questions about the experiences of other people who were required to manage a CMSD in a diversity of work environments and to a desire to investigate these issues. For example, how other employees manage their conditions at work? In what ways the ageing workforce with CMSDs feels supported for their health? In this way, my personal experience, professional background, and genuine interest in occupational health were the main

motivations for embarking on a PhD programme focusing on the management of CMSDs in the workplace.

This study was framed by a complex overarching aim and a number of objectives. Thus, the decision was made that these were best addressed by a MMR approach. Although some authors (Tashakkori and Creswell 2007a; Plano Clark and Ivankova 2016:36-38) support the creation of both quantitative and qualitative research questions, this study was influenced by Onwuegbuzie and Leech (2009) and Creamer (2018), who promote the use of a complex aim and blended objectives to align with the purpose and methods of a MMR study.

The overall aim of this study was to explore employees' experiences of CMSDs in relation to their employment, their perspectives on managing these conditions in the workplace, the strategies used to facilitate and maintain their roles and responsibilities and to identify what services are offered to them in the workplace. Ten objectives were formulated that focused on the key issues introduced in the study aim, and which helped to organise the study into clearly defined components and outline what the researcher hoped to achieve by conducting this research.

1.10 Research Aim and Objectives

The study objectives of this research were to:

1. Identify how older employees with a CMSD describe their experiences in the workplace and the impact the CMSD has on their work-life;

2. Discuss the diversity of older employees' experiences of managing the CMSD in the workplace;
3. Describe employees' perceptions of the support, in relation to the CMSD, that they receive from employers, management and colleagues in the workplace;
4. Describe the strategies that older employees use to manage the CMSD and maintain their work roles and responsibilities and rate the degree of perceived importance and effectiveness of the strategies identified;
5. Describe the services /strategies offered at work as they were perceived by older employees and analyse the relative importance and effectiveness of these strategies as identified by the employees;
6. Identify the underlying factors that influence older employees' decisions to work or not work as a response to the adverse effects of the CMSD on their performance and discuss the rationale for these decisions;
7. Explore older employees' knowledge of, and emotive responses to, the changes in pension and retirement age in relation to the CMSD and their employment plans;
8. Identify the areas of future research needed to develop relevant and feasible strategies that employers and management could effectively utilise to support older employees with CMSDs in the workplace;
9. To enhance an understanding of the issues experienced by older employees with CMSDs and to recommend strategies by which these issues can be optimally managed in the workplace.

10.To develop two publications: (1) an employee leaflet and (2) an employer and managers leaflet that recommend how these issues can be addressed in the workplace and to outline a plan by which these publications can be disseminated.

1.11 Thesis Structure

Chapter 1: Setting the scene

This chapter has described the scope and impact of CMSDs on the workforce and establishes the political and theoretical contexts of this research. It introduced a. the research aim and objectives and b. the theoretical framework and models that guided the study design and implementation. It also introduced and explained the researcher's interest in the research topic and outlined the content of each subsequent chapter.

Chapter 2: A systematic review of the management of CMSDs in the workplace

In this chapter, a comprehensive systematic review of the relevant and current quantitative research that investigated the impact and approaches to the management of CMSDs in the workplace is provided. This chapter is guided by the Cochrane Handbook for Systematic Reviews that supports the transparent description of the methods used and the analysis. A previous version of this systematic review was accepted for publication in the *Journal of Physiotherapy Research International* in August 2018.

Chapter 3: Employees' experiences of managing CMSDs in the workplace: a narrative review

This chapter provides a narrative review of the relevant and current qualitative research that explored the experiences of employees of managing CMSDs in the workplace and maps out the barriers and facilitators as perceived by the workforce. This review was guided by a step-by-step synthesis of qualitative research (Ring et al. 2011; Thomas and Harden 2008). This chapter also highlighted the gaps in existing knowledge and evidence.

Chapter 4: Methodology: Mixed Methods Research

This chapter describes the fundamentals of MMR and outlines the methodology chosen to guide the design of this study. It explains the core characteristics and key components of MMR and justifies the decision for conducting a sequential exploratory design. The chapter also describes any factors that influenced the MMR and introduces the concept of integration which is integral to MMR.

Chapter 5: Research Methods - Qualitative Phase

This study involved two phases that were implemented sequentially: A qualitative research phase and a survey research phase. This chapter describes and justifies the qualitative method chosen, in-depth semi-structured interviews, and explains how these were used to collect data. Decisions related to sample size, participant recruitment and role of the researcher in conducting the interviews are also explained.

Chapter 6: Research Methods - Qualitative Findings

This chapter discusses the findings from the analysis and interpretation of the interview data. The analysis was guided by the framework approach and five themes emerged to represent the findings of the qualitative phase. Each theme is described in detail and illustrated by selected data i.e. significant participant statements.

Chapter 7: Research Methods - Quantitative Phase

In this chapter, the methods used in the quantitative phase of this MMR to collect data are described in detail. The chapter justifies the choice of an online questionnaire and describes how the qualitative findings supported its development. It also provides details of the analysis of the questionnaire using descriptive statistics and relevant figures.

Chapter 8: Research Methods - Quantitative Findings

This chapter discusses in detail the findings of the survey research component of this study. The questionnaire data describes respondent characteristics, explores relationships, and identifies the primary strategies used by older employees with CMSDs in the West Midlands, UK.

Chapter 9: Discussion of the Integrated Findings

The chapter is separated into two parts. The first part is theoretical and includes an explanation of how the findings from the qualitative and quantitative phases were integrated using a narrative joint display. The second part is

analytical and discusses the integrated findings and relates these findings to relevant literature.

Chapter 10: Conclusions

This chapter provides an overview of the research process and a discussion of the learning that occurred from the systematic review, the narrative review, and the integrated findings. It outlines the main contributions of the study and articulates insights and findings that have relevance for policy and practice. Finally, the chapter includes recommendations for practice, policy, and further research.

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Chapter 2: A systematic review of the management of CMSDs in the workplace

2.1 Introduction

The previous chapter has shown that CMSDs are a major issue for the ageing workforce and highlighted that interventions are needed to support the ageing workforce in working better and longer. However, there is a lack of knowledge about the approaches used to manage CMSDs in the workplace. This chapter addresses this knowledge gap by presenting the results of an in-depth systematic review of the literature related to the management of CMSDs in the workplace. It considers key contextual factors and investigates the effectiveness of workplace interventions used to manage CMSDs. This systematic review aimed to identify the workplace management strategies available for employees with CMSDs and determine whether these interventions are effective.

As discussed in Chapter 1, CMSDs can affect the working ability of employees, decrease productivity and increase absenteeism or presenteeism. A number of Cochrane systematic reviews have summarised the scientific evidence supporting workplace interventions used in prevention and return-to-work (RTW) processes (Aas et al. 2009; Shrestha et al. 2018; Mulimani et al. 2018; Freak-Poli et al. 2020; Parry et al. 2017; Aas et al. 2011b). However, published research reports on the management of CMSDs in the workplace are scarce. Management of these conditions in the workplace is clearly influenced by a number of political and social drivers that, in turn, may affect sustainable employability.

The online Cochrane handbook for systematic reviews of interventions defines a systematic review as “*an attempt to identify, appraise and synthesise all the empirical evidence that meets pre-specified eligibility criteria to answer a specific research question. Researchers conducting systematic reviews use explicit, systematic methods that are selected with a view aimed at minimising bias, to produce more reliable findings to inform decision making*” (Higgins and Thomas 2021). A systematic review is a type of literature review that uses a critical and rigorous methodology to address a clearly formulated question and to select and appraise published articles through a systematic approach (Khan et al. 2003). The PICO approach was used to structure the research question and outline the inclusion and exclusion criteria (Table 1).

PICO stands for population or problem, intervention, comparison and outcome (Stern, Jordan, and McArthur 2014). The target population for the review were employees with CMSD(s). Interventions included strategies undertaken at the workplace with the aim of managing these conditions. There was no comparison, and the outcome component of the PICO question reflected the ICF framework, which highlights function and disability as the appropriate outcomes of interactions between individuals and other factors, such as environment (WHO 2015). The formulated question was: What are the workplace interventions offered employees with CMSDs by employers and how effective are these strategies in managing their conditions?

An earlier version of this systematic review (Skamagki et al. 2018) was accepted for publication in the Journal *Physiotherapy Research International* in 2018 (see Appendix 2.1). This study was granted ethical approval by the Ethics Committee of Coventry University (P52506) (Appendix 2.2). Since online

publication, the abstract has been cited 13 times, and the full-text article has been downloaded 146 times. The abstract has been shared on social media via Twitter by 95 individuals. The systematic review presented in this chapter builds on the earlier one and includes studies published between 2018 and May 2021 that met the review criteria.

Table 2.1: PICO approach

Population/problem	Employees with localised and/or widespread CMSDs
Intervention	Any offered workplace interventions
Comparison	Any or none
Outcome	Pain severity/work ability/functional status, symptoms/ presenteeism/sickness absence

2.2 Methods

2.2.1 Search strategy

The literature search included articles that were published between 2008 and 2021. The strategy searched MEDLINE, SCOPUS, CINAHL, AMED, Cochrane, Academic Search Complete and PEDro (an example is provided in Appendix 2.3, 2.4). A limited search for grey literature examined relevant websites including the Institute for Work and Health, the Return-to-Work Knowledge, Versus Arthritis, the Institution of Occupational Safety and Health, and the European Agency for Safety and Health at Work. Search strategies used Boolean operators (AND/OR/NOT), Medical Subject Headings, different spellings, acronyms as well as wild cards. In addition, academic papers, published doctoral theses and conference proceedings were also subjected to citation searching, using Scopus.

2.2.2 Selection of articles: Inclusion criteria

Articles included in the SR investigated the effectiveness of workplace interventions (individual or group interventions) that focused on managing CMSDs and were made available to employees by employers. The papers were published in English in peer-reviewed journals and involved only primary research using an RCT design. Earlier systematic reviews included articles published before 2008, and these concluded that the majority were of very low quality (Aas et al. 2009; Hoe et al. 2012; Aas 2011). Therefore, only articles published between 2008-2021 were included in this SR. The studies that were included recruited adults of common working age (18-68 years old) of any gender. In this way, this systematic review sought to provide an up-to-date overview of the research related to the review question.

2.2.3 Selection of articles: Exclusion criteria

Articles that focused purely on prevention and RTW strategies were excluded. This review also excluded articles when subjects presented with acute MSDs or other serious pathologies (e.g. cancer, hypertension or cardiovascular diseases, symptomatic disc prolapses or severe cervical spine disorders, postoperative conditions in the neck and shoulder region, history of severe trauma, and pregnancy). The inclusion and exclusion criteria established for this review are summarised in Table 2.2.

Table 2.2: Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
Participants/subjects adults of working age (18 to 68 years)	Studies that included specific pathological conditions (e.g. tumours, infections, fractures)
All employment sectors and types of jobs	Hypertension or cardiovascular diseases, symptomatic disc prolapses or severe disorders of the cervical spine, postoperative conditions in the neck and shoulder region, history of severe trauma, and pregnancy
Employees with reported CMSDs (12 weeks or more) involving any part of the body	Acute musculoskeletal disorders
Interventions focused on the management of CMSDS	Interventions focused on prevention and RTW
RCT design	Pilot studies, surveys and qualitative studies

2.3 Screening

The titles and abstracts of the selected articles were collated and duplicates were removed before the final selection was made. The main researcher extracted results reported by the authors of the relevant papers and the study characteristics were collated including the design, country where the interventions were implemented, participant/subject details, the types of interventions, the outcome measures used, and the results. In addition, a member of the supervisory team independently reviewed the process.

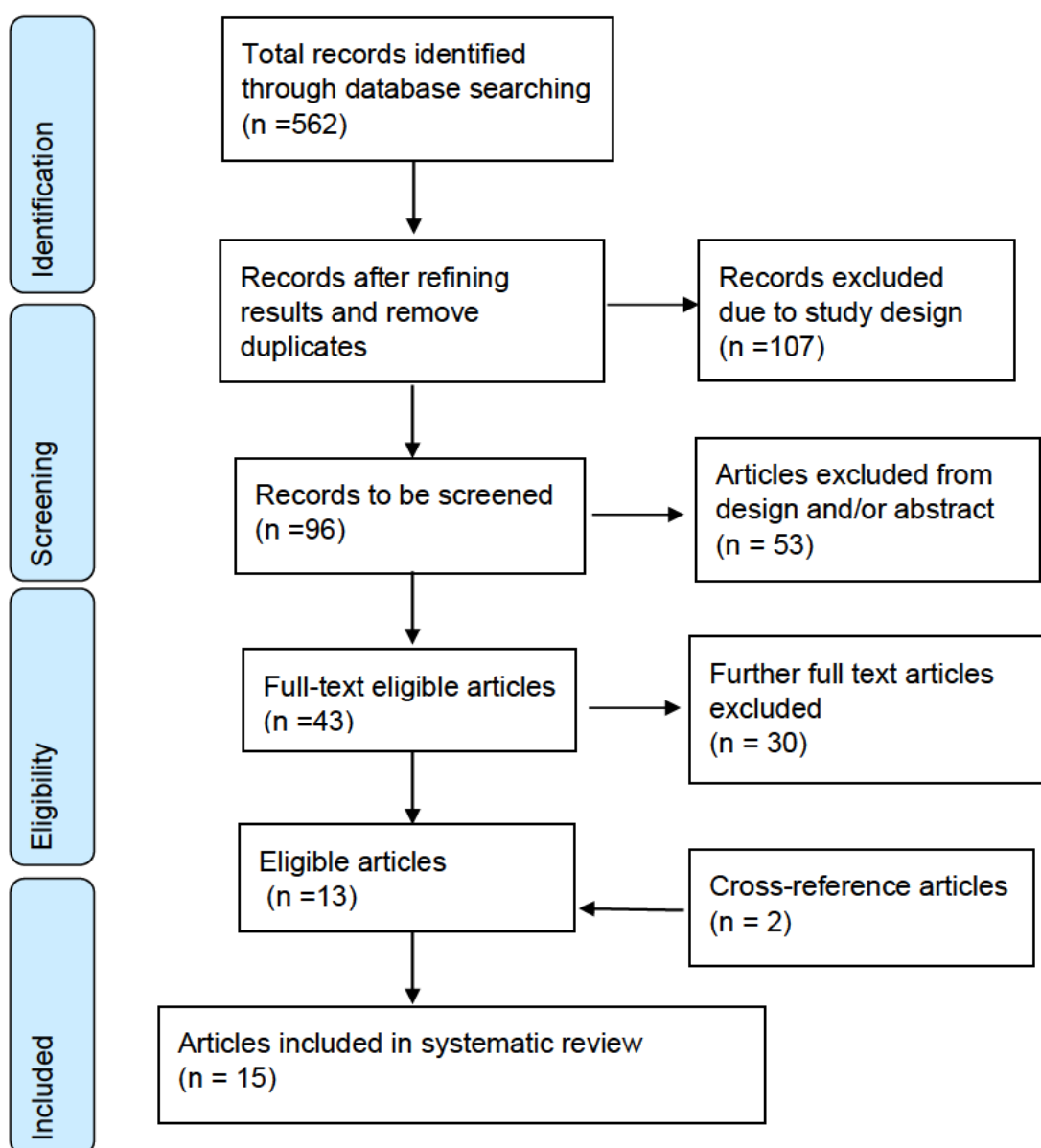
2.4 Results

The included articles were published between 2008 and 2021. One of the advantages of reviewing articles conducted after 2008 was the high quality of the RCTs identified. The search identified 562 references, 6 references in AMED, 207 in Academic Search Complete, 74 in MEDLINE, 45 in CINAHL, 208 references in SCOPUS and 22 references in PEDro. After removing duplicates and refining results, 203 references remained (Figure 2.1). The study design of

each article was reviewed and the titles and abstracts were read. The full text of 43 articles was obtained, however, only 13 met the inclusion criteria (for example articles focused on RTW, prevention or management of work-related injuries that led to sick leave were excluded) and were included in the review. The article reference lists were hand searched this identified 12 more articles. These articles were assessed and only two were included in the final review. In summary, 15 articles were included in the review and consensus on the final results was achieved with a second researcher (AK) who reviewed and replicated the search strategy.

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Figure 2.1: PRISMA Flow chart of study identification, selection and synthesis



2.5 Characteristics of the included studies

The characteristics of articles included in this review are presented in Table 2.3. Of the 15 selected articles, one was conducted in the USA, eight in Denmark, one in Finland, two in the Netherlands and three in Australia. None of the articles, that met the inclusion criteria, were conducted in the UK. All the articles described a randomised or a cluster randomised controlled trial design, and local ethics committees granted ethical approval. The participants' baseline

characteristics were the same except Zebis et al. (2011) where the control group had a higher proportion of men than the training group. Detailed inclusion and exclusion criteria were used to ensure participant homogeneity and safety. The mean age of each sample was provided in each article. The included studies used a range of physical, psychological, workplace and economic outcomes. From these primary and secondary outcomes, only the most common were analysed in this review, such as symptom modifications, pain severity, presenteeism and sickness absence,

In Australia, a research group conducted a large prospective parallel arm cluster-randomized controlled trial (Ting, Chen, and Johnston 2019; Johnston et al. 2021; Pereira et al. 2019). The authors used the same study protocol but with different subject groups. They analysed the results and reported multiple primary and secondary outcomes in different published articles (Ting, Chen, and Johnston 2019; Johnston et al. 2021; Pereira et al. 2019). The authors suggested that the only baseline difference between the groups occurred in one outcome measure called total ergonomic score⁴, which was higher in the intervention group.

2.6 Risk of bias assessment

Many quantitative research critical appraisal systems and tools have been developed and can be used to assess the rigour of the study design, the strength of the resulting evidence and the implementation of the studies. Differences in intention, purpose, components, construction and psychometric properties of different critical appraisal tools for quantitative research reports

⁴ A 37-item checklist based on Australian government guidelines (Comcare 2008)

have been identified (Katrak et al. 2004). As a result, there is considerable disagreement between researchers. A review of these critical appraisal systems was conducted by medical specialities (Baker et al. 2010). This review positively evaluated the Scottish Intercollegiate Guidelines Network (SIGN) as an established and validated tool to be used in appraising RCTs, and it was used to guide this systematic review. Since there is no 'gold standard' critical appraisal tool (Katrak et al. 2004), SIGN was used to assess both internal and external validity of the included articles, identify their relevance to practice, how errors were prevented, and facilitate quality judgments. The overall assessment of the strength of the evidence reported in each study is highlighted in the SIGN framework in section 2.1 (see example of an included study in Appendix 2.5) and can be found in the appraisal summary of the included studies below in Table 2.4 (grading criteria of "(+) acceptable", "(++) high quality", "(-) low quality" or (0) un-acceptable/reject).

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Table 2.3: Summary Table of Reviewed Literature

Author	Country	Study design	Sample size Age in years (mean)	Diagnosis	Occupation	Included interventions	Intervention provider, frequency, duration, length of observation	Main outcomes
Andersen, et al. 2008	Denmark	RCT	N _b =48 N _{FU} =48 Age:43.6	Neck muscle pain	7 different workplaces	Specific strength training, general fitness training and health counselling	Provider Experienced instructors Frequency 3 times/week Duration 20 min Length 10 weeks	Pain intensity (in the trapezius muscle 0-100)
Andersen, et al. 2012	Denmark	RCT	N _b = 449 N _{FU} =280 Age:46	Neck and shoulder pain	Office workers	Strength training in 3 different regimes	Provider Experienced instructors Frequency group 1: Once a week Duration group 1: 1 hour Frequency group 2: Three times a week Duration group 2: 20 minutes Frequency group 3: Nine times a week Duration group 3: 7 minutes Length 20-week intervention	Pain intensity Neck and shoulders Health Status (DASH, 1-25)

Andersen, et al. 2010	Denmark	Cluster RCT	N _b =222 N _{FU} =173 Age:46.5	MSK pain symptoms in all regions of the body	Office workers in 12 different geographic locations	Specific resistance training, all-round physical exercise	Provider Experienced instructors Frequency 3 times/week Duration 20 min Length of observation 10 weeks	Pain intensity (0-9)
Baldwin et al. 2012	USA	RCT	N _b =89 N _{FU} =75 Age:50.5	RhA and OA	Office, healthcare, and manual workers, business and financial operations	Workplace ergonomics	Provider occupational therapist (ergonomist) Duration 2x 2.5 hours ergonomic sessions Length of observation 12 and 24 months	Functional status AIMS2 physical component score (0-10 range) Pain AIMS2 symptom component score (0-10 range)
Blangsted et al. 2008	Denmark	RCT	N _b = 616 N _{FU} =440 Age:45.1	Chronic MSK symptoms in neck and shoulders	Office workers	Specific resistance training	Intervention group 1: Frequency 3 sessions per week Duration 20 min Intervention group 2 Frequency Visits from instructors 1-4 times per month	Pain intensity (0-9) Pain duration (days) Work ability Index (7-49)

							Length of observation 12 months	
Hutting et al. 2015	The Netherlands	RCT	N _b = 129 N _{FU} = 88 Age: 46.3	Non-specific complaints (arm, neck, shoulder)	Workers in different organisations	Self-management programme and usual care group	Provider: Physical therapist Frequency 6 weekly sessions Duration 2.5h Length of observation 3, 6 and 12 months	Health Status (DASH general module) Work Status (DASH work module) Absenteeism (Days) Pain (NPRS)
Jakobsen et al. 2015	Denmark	RCT	N _b = 200 N _{FU} = 184 N _{FUC} = 97 Age: 42.5	MSK pain (both acute and chronic)	Healthcare workers	High-intensity strength training group, home exercise group	Provider Training instructor Frequency 5 times x 10 min/week Duration 45-50min total Length of observation 10 weeks	Pain (0-10)
Jay et al. 2011	Denmark	RCT	N _b = 40 N _{FU} = 33 Age: 43.5	Neck, shoulder and low-back pain	Laboratory technicians	Kettlebell training	Provider Experienced kettlebell instructor Frequency 3 days /week Duration 20min sessions Length of observation 8-week follow-up	Pain intensity (neck/shoulder) (0-10) Pain intensity of low back (0-10)

Johnston et al. 2021	Australia	Cluster RCT	$N_b = 763$ $N_{bc} = 96$ $N_{FU} = 583$ Age: $EHP_{gr} = 44.1$ $EET_{gr} = 42.9$	Neck pain	Office workers	Individualised workstation, ergonomic interventions, neck-specific exercise training, and health promotion	Provider: Physiotherapist Frequency: 3 times/week Duration: 20 min/session Data collection time: 12 weeks and 12 months	Neck pain intensity (0-9)
Lambeek et al. 2010	The Netherlands	RCT	$N_b = 134$ $N_{FU} = 126$ Age: 46.1	Chronic low back pain	Any full time or part time paid work	Usual Care integrated care ergonomics, and graded	Intervention group Provider: Employer, clinicians and ergonomists (multilevel focus) Control group Provider: Medical specialist, occupational physician, general practitioner, and/or allied health professionals Length of observation 3-6-12 months of follow-up	Neck Pain (0-10) Functional status (Roland disability questionnaire, 0-24) Sick leave (Days)
Pereira et al. 2019	Australia	Cluster RCT	$N_b = 763$ $N_{bc} = 96$ $N_{FU} = 583$ Age: $EHP_{gr} = 42.4$ $EET_{gr} = 42.4$	Neck pain	Office workers	Individualised workstation ergonomic intervention, neck-specific exercise training, and health promotion	Provider: Physiotherapist Frequency: 3 times/week Duration: 20 min/session Data collection time: 12 weeks and 12 months	Absenteeism (Days lost)

Shiri et al. 2011	Finland	RCT	N _b =222 N _{FU} =173 Age:45.2	Upper-extremity MSK disorders	Healthcare, clerical and warehouse workers	Workplace ergonomic intervention	Provider: Occupational therapist or physiotherapist Length of observation 8, 12, and 52 weeks	Neck Pain (0-10)
Sundstrup et al. 2014	Denmark	RCT	N _b =66 N _{FU} =66 Age:45.5	Upper-limb chronic pain	Slaughter-house workers	High- intensity strength training, Ergonomic training and education	Provider skilled instructor Frequency 3 sessions/week Duration 10 min/session Length of observation 10 weeks follow up	Work ability WAI Item 5: Sick leave (1-5)
Ting et al. 2019	Australia	Cluster RCT	N _b =350 N _{bc} =96 N _{FU} = 273 Age: EHP _{gr} = 43 EET _{gr} = 41.68	Neck pain	Office Workers	Ergonomics, neck and shoulder strengthening exercises, and health promotion	Provider: Physiotherapist Frequency: 3 times/week Duration: 20 min/session Data collection time: 12 weeks and 12 months	Work ability WAI

Zebis et al. 2011	Denmark	RCT	N _b =537 N _{FU} =448	Non-specific neck and shoulder pain	Industrial workers	High-intensity strength training	Provider Educated supervisors on the manual Frequency 3 sessions/week Duration 20 min per session Length of observation 20-week period	Neck pain intensity (0-9) Right shoulder pain intensity (0-9) Left shoulder pain intensity (0-9)
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Note: N=Number, RCT=Randomised controlled trial, EHP=Combined ergonomics and health promotion, EET=Combined ergonomics and neck/shoulder strengthening exercise, MSK=Musculoskeletal, RhA=Rheumatoid Arthritis, OA=Osteoarthritis, N_b=Number baseline, N_{FU} =Number Follow-up, AIMS Arthritis Impact Measurement Scales, DASH=Disabilities of the Arm, Shoulder and Hand, NPRS= Numeric pain rating scale, WAI= Work Ability Index, gr=group

2.7 Quality appraisal

The quality of the included articles was assessed using the SIGN tool for the appraisal of RCTs. The quality of the included articles is presented in Table 2.4. Ten articles were classified as (++) high quality (>85% of criteria met) and 5 articles were classified as (+) acceptable. Overall, the included articles were of very good quality minimising the risk of bias causing underestimation or overestimation of the 'true' effect of the interventions. Randomisation was achieved with either preratification, labelled paper and selection from an opaque plastic or with random computer-generated numbers. Participants were randomly allocated into clusters using a computer-generated random numbers table, and only one study used a coin toss (Zebis et al. 2011). All the authors conducted a power analysis identifying the appropriate sample size that would detect a 15% or a 10% change for the selected outcome. However, Hutting et al. (2015) reported a drop-out rate of almost 40% and in three articles (Johnston et al. 2021; Ting, Chen, and Johnston 2019; Pereira et al. 2019), neither a clear drop-out rates nor the number of follow-ups (although Pereira et al. 2019 discusses a low follow-up rate at 49.5%) for the subject clusters were reported leading to limited validity and reliability of the findings.

The primary outcome measures used to collect data were clearly justified in all the articles. Participants' outcomes were analysed within the group to which they were originally allocated. In contrast, in one study (Jay et al. 2011), outcome data from only participants who completed the trial were analysed. Both an intention-to-treat (ITT) analysis and a per-protocol analysis was conducted and discussed by Johnston et al. (2021). Lastly, the statistical analysis was clearly explained in most articles and appropriate values were presented in the text and in Table 2.5. The exact p-values were not documented in three articles (Pereira et al. 2019; Ting,

Chen, and Johnston 2019; Johnston et al. 2021) and this was important because statistically significant results were not achieved.

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Table 2.4: Quality Appraisal summary of the included studies using SIGN appraisal tool for RCTs

Authors	Appropriate and clearly focused question	Randomised allocation	Adequate concealment method	Blind treatment allocation	Treatment and control groups are similar at the start of the trial.	The only difference between groups is the treatment under investigation	All relevant outcomes are measured in a standard, valid and reliable way.	Drop-out rates	Intention to treat analysis	Results are comparable for all sites.	How well was the study done to minimise bias?	Are the results of this study directly applicable to the patient group targeted by this review?	The overall effect is due to the study intervention
Andersen et al. 2008	Yes	Yes	Yes	Yes	Yes	Can't say	Yes	<20%	Yes	Yes	++	Yes	Yes
Andersen et al. 2010	Yes	Yes	Yes	Yes	Yes	Can't say	Yes	<20%	Yes	Yes	++	Yes	Yes
Andersen et al. 2012	Yes	Yes	Yes	Yes	Yes	Can't say	Yes	<20%	Yes	Yes	++	Yes	Yes
Baldwin et al. 2012	Yes	Can't say	Can't say	Yes	No	No	Yes	15.70%	Yes	Yes	+	Yes	Can't say
Blangsted et al. 2008	Yes	Yes	Yes	No	Yes	Yes	Yes	19.80%	Can't say	Yes	++	Yes	Yes
Hutting et al. 2015	Yes	Yes	Yes	No	Yes	Yes	Yes	40%	Yes	Yes	++	Yes	Yes

Jakobsen et al. 2015	Yes	Yes	Yes	Yes	Yes	No	Yes	<20%	Yes	Yes	++	Yes	Yes
Jay et al. 2011	Yes	Yes	Yes	No	Yes	Yes	Yes	17.5%	No	N/A	+	Yes	Can't say
Johnston et al. 2021	Yes	Yes	Yes	Yes	Yes	No	Yes	<20%	Yes	Yes	++	Yes	Yes
Lambeek et al. 2010	Yes	Yes	Yes	No	Yes	Yes	Yes	13%	Yes	Yes	++	Yes	Yes
Pereira et al. (2019)	Yes	Yes	Yes	Yes	Yes	No	Yes	<20%	Yes	Yes	++	Yes	Yes
Shiri et al. 2011	Yes	Yes	Yes	Can't say	Yes	No	Yes	>20%	Can't say	Yes	+	Yes	Yes
Sundstrup et al. 2014	Yes	Can't say	Yes	No	Yes	Yes	Yes	8%	Yes	N/A	+	Yes	Yes
Ting et al. 2019	Yes	Yes	Yes	Yes	Yes	No	Yes	<20%	Yes	Yes	++	Yes	Yes
Zebis et al. 2011	Yes	Yes	Yes	Can't say	Yes	No	Yes	15%	Yes	Can't say	+	Yes	Yes

Table 2.5: Results and Outcomes

Note: Δ demonstrates the difference between the baseline values and the time of the relevant measurement, * highlights significant difference of $p < 0.05$, ** highlights significant difference of $p < 0.01$, 95% CI=95% confidence Interval. Results are presented in mean values and/or standard error.

Author, Year	Results			
Andersen et al. 2008	Intervention group 1 Specific strength training	Intervention group 2 General fitness training	Control group	Between groups comparison
	General pain (in Trapezius muscle 0-100)			
	10 weeks $\Delta = -12, (\pm 0.30), p < 0.0001^{**}$	10 weeks $\Delta = -6$	10 weeks $\Delta = -1$	No
	Worst pain (in Trapezius muscle 0-100)			
	10 weeks $\Delta = -25, (\pm 0.22), p < 0.0001^*$	10 weeks $\Delta = -11$	10 weeks $\Delta = -5$	No
	Acute pain (in Trapezius muscle 0-100)			
	10 weeks $\Delta = -4.8, p < 0.05^*$ The acute adverse effect lasted 2 hours	10 weeks $\Delta = -5.3, p < 0.01^{**}$	10 weeks	No

Andersen et al. 2010	Intervention group 1 Specific resistance training	Intervention group 2 All-round physical exercise	Control group	Between groups comparison
	Neck pain (0-9)			
	$\Delta=-0.73\pm0.36$, $p<0.05^*$	$\Delta=-0.91\pm0.31$, $p<0.01^{**}$	$\Delta=0.40\pm0.32$, $p>0.05$	No
Andersen et al. 2012	Intervention group 1 Strength training 1/week	Intervention group 2 Strength training 3/week	Intervention group 3 Strength training 9/week	Between groups comparison
	Neck pain (0-10)			
	20 weeks $\Delta=-0.74$, $p<0.01^{**}$	20 weeks 0.78 , $p<0.01^{**}$	20 weeks 0.71	No
	Right shoulder pain (0-10)			
	$\Delta=-0.94$, $p<0.01^{**}$	$\Delta=-0.61$	$\Delta=-0.83$, $p<0.01^{**}$	No
	Left shoulder pain (0-10)			
	$\Delta=-0.69$, $p<0.01^{**}$	$\Delta=-0.32$	$\Delta=-0.62$	No
	Health Status (DASH, 1-25)			
	$\Delta=-6$, $p<0.01^{**}$	$\Delta=-9$, $p<0.05^*$	$\Delta=-2$	No

Baldwin et al. 2012	Intervention group	Control group	Between groups comparison
	Ergonomics and specific programme and schedule	Written educational materials	
	Functional status (AIMS2 physical component 0-10)		
	12 months $\Delta = -0.24 (\pm 0.94), p < 0.04^*$	12 months $\Delta = -0.09 (\pm 0.66), p < 0.26$	12 months 1.63 (± 1.27) intervention, $p = 0.45$ 1.26 (± 1.23) control, $p = 0.45$
	24 months $\Delta = -0.29 (\pm 0.80), p < 0.01^{**}$	24 months $\Delta = -0.12 (\pm 0.82), p < 0.25$	24 months 1.58 (± 1.09) intervention, $p = 0.76$ 1.23 (± 1.18) control, $p = 0.76$
	Pain (AIMS2 symptom component 0-10)		
	12 months $\Delta = -1.27 (\pm 2.00), p < 0.01^{**}$	12 months $\Delta = -0.61 (\pm 1.93), p < 0.07$	12 months 4.60 (± 2.44) intervention, $p = 0.58$ 4.16 (± 2.37) control, $p = 0.58$
	24 months $\Delta = -1.25 (\pm 2.16), p < 0.01^{**}$	24 months $\Delta = -0.29 (\pm 1.94), p < 0.34$	24 months 4.62 (± 2.22) intervention, $p = 0.42$ 4.48 (± 2.31) control, $p = 0.42$

Blangsted et al. 2008	Intervention group 1 Specific resistance training	Intervention group 2 All-round physical exercise	Control group Education
	Between-group comparisons No specific numerical values for changes in each group 12 months		
	Comparison of both interventions (group 1 and 2) vs Control group Pain intensity (p=0.0318) * in favour of the activity interventions Pain duration (p=0.0565) Work ability (p = 0.3073)		Comparison of intervention group 1 vs intervention group 2 Pain intensity (p=0.5327) Pain duration (p=0.4046) Work ability (p = 0.3073)

Hutting et al. 2015	Intervention group 1 Self-management	Intervention group 1 Usual care	Between groups comparison
	Health status (DASH general module 0-5)		
	12 months $\Delta=-7.96$	12 months $\Delta=-7.22$	12 months $\Delta=-0.73, p < 0.10$
	Work Status (DASH work module 0-5)		
	12 months $\Delta=-0.27$	12 months $\Delta=-1.63$	12 months $p=0.04^*$ in favour of the self-management group
	Absenteeism (days)		
	12 months $\Delta=-0.27$	12 months $\Delta=-1.63$	12 months $\Delta=4.19$ $p=0.29$
	Pain the last week (NPRS)		
	12 months $\Delta=-0.61$	12 months $\Delta=-1.2$	12 months $\Delta=-0.63, p=0.47$

Jakobsen et al. 2015	Intervention group Workplace programme	Control group Home programme	Between groups comparison
	Average Pain (0-10) (Only the results of the chronic pain groups are reported)		
	10 Weeks $\Delta=-1.7$, $p < 0.0001^{**}$	10 Weeks $\Delta=-0.8$, $p < 0.0001^{**}$	10 Weeks $\Delta=-1.0$, $p < 0.0003^{**}$ <i>in favour of the intervention group</i>
Jay et al. 2011	Intervention group Kettlebell training	Control group Recommendations	Between groups comparison
	Pain intensity of the neck/shoulder (0-10)		
	8-weeks $\Delta=-1.7$	8-weeks $\Delta=0.3$	8-weeks $\Delta=-2.1$, $p=0.02^{*}$ <i>in favour of the intervention group</i>
	Pain intensity of the low back (0-10)		
	8-weeks $\Delta=-1.6$	8-weeks $\Delta=-0.2$	8-weeks $\Delta=-1.4$, $p=0.05^{*}$ <i>in favour of the intervention group</i>

Johnston et al. 2021	Intervention group Ergonomics and exercise	Control group Ergonomics and health promotion seminars	Between groups comparison
	Neck pain (0-9)		
	12 weeks $\Delta=-2.32$, $p = 0.036^*$ 12 months $\Delta=-1.61$	12 weeks $\Delta=-1.75$ 12 months $\Delta=-1.9$	No
Lambeek et al. 2010 (continued)	Intervention group Integrated care	Control group Usual care	Between groups comparison
	Neck pain (0-10)		
	3 months $\Delta=-1.11$ (± 0.39) 12 months $\Delta=-1.64$ (± 0.35)	3 months $\Delta=-1.59$ (± 0.38) 12 months $\Delta=-1.85$ (± 0.36)	3 months $\Delta=-0.99$, $p < 0.08$ 12 months $\Delta=-0.21$, $p < 0.67$
	Functional Status (Roland disability questionnaire 0-24)		
	3 months $\Delta=-3.76$ (± 0.86) 12 months $\Delta=-7.16$ (± 0.71)	3 months $\Delta=-3.82$ (± 0.85) 12 months $\Delta=-4.43$ (± 0.72)	3 months $\Delta=-0.11$, $p < 0.93$ 12 months $\Delta=-2.86$ $p < 0.001^{**}$ <i>in favour of the intervention group</i>

Lambeek et al. 2010	Absenteeism (days)		
	3 months 88 days 12 months 82 days	3 months 208 days 12 months 175 days	3 months <i>p=0.003** in favour of the intervention group</i> 12 months <i>p=0.003** in favour of the intervention group</i>
Pereira et al. (2019)	Intervention group Ergonomics and specific exercise training	Control group Ergonomics and health promotion information seminars	Between groups comparison
	Absenteeism (Days)		
	12 weeks $\Delta=0.650$ $p<0.01^*$ 12 months $\Delta=0.158$	12 weeks $\Delta=0.291$ 12 months $\Delta=0.742$ $p<0.01^*$	<i>No significant difference between groups at all follow-ups.</i> <i>No specific numerical values provided for changes in each group.</i>

Shiri et al. 2011	Intervention group Workplace assessment	Control group	Between groups comparison
	Pain intensity (0-10)		
	2 Weeks $\Delta=-1.27$	2 Weeks $\Delta=-0.69$	2 Weeks $\Delta=-0.58, p=0.05^*$ <i>in favour of the intervention group</i>
Sundstrup et al. 2014	Intervention group Strength training	Control group Ergonomic training	Between groups comparison
	WAIS Item 5: Sick leave (1-5)		
	10 weeks $\Delta=-0.2$	10 weeks $\Delta=-0.5$	10 weeks $\Delta= 0.2, p = 0.47$
	Work Ability Index (7-49)		
	10 weeks $\Delta=-0.3$	10 weeks $\Delta=-2.2, p<0.01^{**}$ WAI decreased (i.e. worsened) in the ergonomic group	10 weeks $\Delta=-2.3, p = 0.012^{**}$ <i>in favour of the intervention group</i>

Ting et al. 2019	Intervention group Ergonomics and specific training	Control group	Between groups comparison
	Work Ability Index (7-49)		
	Intervention group 12 weeks $\Delta=8.82$ <i>No significant differences</i>	Values were not given	12 weeks $\Delta=1.11$, $p=0.03^*$ <i>in favour of the intervention group</i> <i>Significant difference identifies with the protocol analysis.</i>
Zebis et al. 2011	Intervention group Strength training	Control group Advice	Between groups comparison
	Neck pain (0-9)		
	20 weeks $\Delta=-1.8 (\pm 1.9)$	20 weeks $\Delta=-2.9 (\pm 2.3)$	20 weeks $\Delta=-1.1$, $p < 0.001^{**}$ <i>in favour of the intervention group</i>
	Shoulder pain (0-9)		
	20 weeks Right Shoulder pain $\Delta=-1.4 (\pm 1.7)$ Left Shoulder pain $\Delta=-0.9 (\pm 1.3)$	20 weeks Right Shoulder pain $\Delta=-2.5 (\pm 2.6)$ Left Shoulder pain $\Delta=-2.2 (\pm 2.6)$	20 weeks Right Shoulder pain $\Delta=-1.1$ Left Shoulder pain $\Delta=-1.3$

2.8 Effectiveness of the interventions

Effect of different physical exercise interventions at the workplace

Andersen et al. (2010; 2012) conducted two studies to investigate the effect of different physical exercise interventions on musculoskeletal pain in all regions of the body and specifically in the neck and the shoulder. For example, in the first study (Andersen et al. 2010), 549 office workers were allocated to 3 separate groups; a specific resistance training group (dumbbell exercises of front raise, lateral raise, reverse flies, shrugs and wrist extension), an all-around exercise group and a reference intervention group. The results demonstrated that pain in the strength training group decreased with a statistically significant difference for neck pain ($p < 0.01-0.05$). The second RCT study (Andersen et al. 2012) measured the effects of strength training in three different regimes (the first group trained for 1 hour per week, the second group trained 20 minutes three times a week, and the 3rd group trained 7 minutes nine times a week). The results demonstrated a reduction ($p < 0.005$) of neck and shoulder pain in office workers who engaged in a weekly one-hour programme.

Zebis et al. (2011) evaluated the effect of a strength training intervention at the workplace on non-specific neck and shoulder pain among industrial workers and reported a reduction of pain in the intervention group. However, the pain intensity differences reported at baseline may have affected the outcome of this study. Jay et al. (2011) investigated a progressive kettlebell exercise programme for the management of chronic musculoskeletal pain at the workplace and showed that progressive kettlebell training 3 times per week can reduce the pain intensity of neck and shoulder ($p < 0.02$) and the pain intensity of

the lower back ($p < 0.05$). In addition, a Danish RCT (Blangsted et al. 2008) demonstrated a reduction in intensity ($p < 0.0318$) and duration of the pain ($p < 0.0565$) in a resistance training group and an all-around physical exercise group (aiming to increase physical activity with e.g. Nordic walking or step count) compared to a reference group (general health-promoting activities that did not include physical activity). In this RCT, no significant changes were identified between different areas of the body, the active interventions of the first two groups, gender or the type of intervention.

Effect of physical exercise interventions in the workplace compared to other interventions

Jakobsen et al. (2015) investigated the effectiveness of a workplace versus a home-based exercise programme for chronic musculoskeletal neck and back pain conditions. The 200 participants were allocated into two groups and were encouraged to perform a strengthening exercise programme (TheraBand, Kettlebells) at the workplace for 10 weeks, whereas the control group performed physical exercises at home following instructions from poster illustrations. Although results showed a significant decrease in pain for both groups ($p < 0.0001$), the workplace CMSD group experienced a significantly greater reduction of pain compared with the control group ($p = 0.003$). Baldwin et al. (2012) compared the use of a self-management manual at home with the use of the same manual in the workplace combined with an individual ergonomic intervention for employees with RhA and OA. The workplace intervention consisted of workstation equipment modifications, person-specific exercises, postural control or lifestyle changes given by an occupational therapist trained in ergonomics. The results demonstrated only a within-group

statistically significant improvement for the workplace treatment group in physical functioning and pain after 12 months ($p < 0.04$) and 24 months ($p < 0.01$). The results, however, could have been affected by the heterogeneity in pain intensity and the RhA and OA levels at the beginning of the study.

Effect of usual care /ergonomics at the workplace compared to other interventions

Hutting et al. (2015) compared a self-management programme with a usual care group at the workplace using the DASH work-status questionnaire. The authors identified that the self-management group showed a significant improvement ($p=0.04$) compared to the usual care group. However, no significant differences in pain intensity and functional status were reported.

Sundstrup et al. (2014) compared a strength training programme to an ergonomic training and education programme among slaughterhouse workers with chronic musculoskeletal pain. Similarly, no significant differences in pain and function were identified between or within the two groups during the 10 weeks of testing. The overall score of the WAI in the ergonomic group decreased after the intervention ($p = 0.012$). The authors questioned this result on the grounds that managers do not have the necessary knowledge and training in occupational health to deliver ergonomic interventions effectively.

In Shiri et al.'s (2011) study, a physiotherapist assessed the effect of an ergonomic intervention on pain and sickness absence caused by upper-extremity musculoskeletal disorders. Pain intensity ($p<0.05$) decreased in the first two weeks, but there were no significant differences at the end of a yearly follow up. Unfortunately, this study had a high drop-out rate from both the intervention ($N=34$) and the control group ($N=31$). Attrition from the control

group was probably due to higher levels of pain at baseline, and therefore the true effect of intervention at follow-up could have been affected. The study was also underpowered and according to the authors, in order to detect the true effect of the intervention, a total of 205 subjects in each group would have been necessary. However, the study at baseline included only 84 (control) and 89 (intervention) participants.

Specific health professionals were also involved in Lambeek et al.'s (2010) study, which assessed the effectiveness of integrated care compared with usual care in the workplace for employees with chronic low back pain. The workplace interventions were provided by health care professionals, such as a clinical occupational physician, a manual therapist, an occupational therapist and a physiotherapist. Although pain and functional status improved in both two groups, the integrated care group demonstrated statistically significant improvement ($p < 0.001$) in functional status.

More recently, Pereira et al. (2019), Johnston et al. (2021) and Ting, Chen, and Johnston (2019) used the same study protocol with different subgroups within a large RCT to evaluate the effects of a combined ergonomics and neck/shoulder strengthening exercise intervention versus a combined ergonomics and health promotion intervention on work ability among office workers. They reported the subgroup results separately. Pereira et al. (2019) identified that the combined programme did decrease absenteeism at 12 months compared to ergonomics and education only ($p < 0.01$) in employees with chronic neck pain. Johnston et al. (2021) reported that pain intensity decreased for the intervention group but these results were not statistically significant. Lastly, Ting, Chen, and Johnston (2019) reported that in a protocol

group-by-time analysis employees with chronic neck pain presented with better work ability score after 12 weeks. However, there were no significant changes detected in the ITT analysis.

2.9 Discussion

This systematic review collated and synthesised current evidence from the scientific literature to identify the workplace management strategies available for employees with CMSDs and determine whether these interventions are effective. Studies included in this review were assessed for bias and rated for quality using the SIGN critical appraisal tool. Fifteen studies were categorised as high or acceptable quality, and these were selected for the final review. The RCTs included were highly varied in the type of interventions, type of employment and the outcome measures used. Typically, articles in systematic reviews differ to an extent. This review only included RCTs that met predefined criteria, but a broader approach to the management interventions/strategies was taken as these were more difficult to define, and the number of relevant articles was limited. The conclusion of this systematic review is that the use of physical activity and/or integrated health care at the workplace can decrease pain and symptoms for employees who experience CMSDs. The results of the articles reviewed suggest that the type of the exercise programme used, the method of delivery and the regime may affect the outcome. For example, Baldwin et al. (2012) provided supervised exercise and supplementary manuals for self-management, telephone calls for reinforcement and face-to-face instructions with other resources and reported a positive influence on levels of pain, function, motivation and lifestyle changes. The use of a specific strength exercise programme appeared to have a better

effect on pain and functional activity when compared with other types of exercises, but all exercise programmes offered in the workplace showed within-group improvements.

In earlier systematic reviews, for example, Mulimani et al. (2014), Hoe et al. (2012), Mischke et al. (2013), Rw et al. (2010), Aas (2011) and Aas et al. (2009), the effects of workplace ergonomic training interventions or exercise interventions were assessed but these authors focused only on the prevention of MSK conditions. Some systematic reviews assessed workplace interventions for the management of MSDs (acute and chronic), but the results for ergonomic interventions were inconclusive due to the inclusion of low-quality RCTs, poor internal validity, heterogeneity and lack of generalisability to the wider population (Shrestha et al. 2016; Tew et al. 2015; Hogan, Greiner, and O'Sullivan 2014; Pieper, Schröer, and Eilerts 2019; Sundstrup et al. 2020; Skamagki et al. 2018; Leyshon et al. 2010). There was also poor evidence to suggest that self-management programmes can affect pain and the management of MSDs in the workplace, and, in some studies, the improvement rate dropped after a year (Blangsted et al. 2008; Jay et al. 2011; Hutting et al. 2015).

This review did find positive changes for those with CMSDs in pain perception and intensity in response to strength training. The findings highlight that a structured and well-delivered exercise programme in the workplace can decrease pain levels and improve the functional status of employees with chronic musculoskeletal pain. A recent systematic review (Sundstrup et al. 2020) reported similar results that suggested that the implementation of strength training in the workplace can reduce MSDs among workers with

physically demanding work. However, other types of interventions that could affect pain were not identified in the literature related to the management of CMSDs in the workplace. Studies that explored in general the management of MSDs indicated that psychological techniques like cognitive behavioural therapy are not effective when applied alone (Jørgensen et al. 2011; Basler et al. 2007). Lastly, an earlier systematic review (Silva Guerrero et al. 2018), which also included low and moderate quality studies, reported that psychological interventions combined with physiotherapy may decrease MSK pain and disability in the short term. However, only small effect sizes were identified (Silva Guerrero et al. 2018) and the authors concluded that additional rigorous research is still required.

Another important finding emerging from this review was the significant improvement in functional status and the decrease in pain associated with the use of a workplace integrated care programme by an allied health professional (e.g. physiotherapist, occupational therapist with ergonomic training). This review also concluded that the use of private medical insurance with direct access or other health care services at the workplace (e.g. physiotherapy services) could have a positive effect in managing long-term MSDs [e.g. Lambeek et al. (2010) and Shiri et al. (2011)]. Further research is, however, necessary to investigate the success of those programmes in the health care environments of different countries where programme implementation would vary significantly. Again, the societal and political context is crucial and implementation could be problematic without financial support from the government or employers.

Additionally, healthcare professionals, like physiotherapists, are able to provide a well-structured exercise programme as part of their role (Hutting et al. 2020). It is recognised that a physiotherapist could acquire the expertise required to help employees manage chronic conditions in the workplace and to remain healthy at work (Johnston and Shaw 2013; Donovan, Khan, and Johnston 2021). But, there is scant evidence to show the effectiveness of physiotherapy in the workplace (Donovan, Khan, and Johnston 2017; Donovan, Khan, and Johnston 2021; Hutting et al. 2017). The grey literature reviewed identified some one-off successes in individual workplaces. Still, it is not known whether different departments of the same company followed the same protocol, if there are long-term results of the interventions, or if these workplaces are still providing the service.

Four studies in this review used self-management strategies either as the primary intervention under investigation (Hutting et al. 2015) or for the control group against which other interventions could be compared (Andersen et al. 2008; Andersen et al. 2010; Baldwin et al. 2012). Self-management programmes included leaflets and manuals, and e-learning modules to prepare people to manage their health conditions or change their lifestyles. The self-management programmes appeared to reduce symptoms and pain in the above studies, but these results were not statistically significant. Although the use of self-management programmes seems to provide a cost-effective intervention (Lambeek et al. 2010; Ellis et al. 2010) there is inadequate evidence for the effectiveness of these programmes for people with CMSDs (Nolte and Osborne 2013; Foster et al. 2018).

Presenteeism was measured in one article using the Dutch version of the Stanford Presenteeism Scale (SPS-6) (Hutting et al. 2015). The authors suggested that reducing chronic musculoskeletal complaints had the potential to affect presenteeism, however, the results did not statistically demonstrate any impact. Absenteeism was measured in three studies (Baldwin et al. 2012; Shiri et al. 2011; Sundstrup et al. 2016; Pereira et al. 2019) but only Pereira et al. (2019) reported significant differences after the completion or at follow up. This lack of significance may be due to the fact that a multidimensional intervention of both workplace ergonomics and neck-specific exercise training was used or that the intensity or frequency of the interventions were too low to have a positive effect on reducing sick leave. Measurements obtained from participants who came to work unwell (presenteeism) may also have affected the results. Lastly, differences in the sample sizes, the baseline pain levels and confounding ergonomic factors may have prevented any differences between the groups being detected.

In one study (Strijk et al. 2011) workers with higher aerobic capacity had a higher work ability score ($p < 0.004$) and, therefore a decreased risk of having a sick leave episode. However, this observational study was based on the association of high levels of aerobic capacity with a reduced incidence of chronic diseases and consequently, reduced sick leave was assumed (Macedo et al. 2009; Kellett, Kellett, and Nordholm 1991). Sundstrup et al.'s (2014) results indicated that ergonomic interventions, when implemented by health care professionals, were more effective than when provided by employers and managers. Results showed that the WAI score was lower than the baseline score after the ergonomic intervention. In the authors' opinion ergonomic

interventions are the 'gold standard' in terms of prevention of work loss for employees with MSDs and that the intervention could not statistically decrease the WAI score. This study may raise questions about the effectiveness of the line managers and employers in delivering ergonomic interventions to support the workforce to manage CMSDs in the workplace. Finally, Ting, Chen, and Johnston (2019) used both ITT and per-protocol analysis indicated significant improvement in work ability when an exercise programme was used in combination with appropriate ergonomics ($p = 0.03$). However, this significant difference referred to data from the per-protocol analysis which compared the intervention groups, including only those participants who completed the study. The authors, however, indicated that there were no significant results from the ITT analysis between the original groups, which eliminates bias and maintains the sample size. Therefore, the results from the per-protocol analysis provide *"only an estimate of the true efficacy of the intervention...do not represent the real-life situation and it is likely to show an exaggerated treatment effect"* (Ranganathan, Pramesh, and Aggarwal 2016).

2.10 Strengths and limitations of the review

A rigorous systematic search of the literature from 2008 to March 2021 was conducted to identify the workplace interventions offered by employers to employees with CMSDs to effectively manage their condition(s). The strengths of this review comprise the inclusion of high-quality RCTs that investigated workplace interventions for the management of chronic musculoskeletal disorders. Studies published before 2008 were excluded as previous systematic reviews showed that RCTs conducted during the previous decade were characterised as low quality and poor external validity meant that the results

could not be effectively generalised. A limitation of this systematic review is that the degree of publication bias was not assessed. Still, several relevant studies that reported negative or no effects for important outcomes were included. In addition, the articles included were heterogenous as the RCTs originated in countries with different socio-economic, political and health systems.

2.11 Conclusion

Despite the heterogeneity of studies across a wide range of countries and employment sectors, the reviewed studies were consistent in reporting that high-intensity strength exercises and/or integrated health care at the workplace can decrease pain and symptoms for employees who experience chronic musculoskeletal disorders. Our results agree with other recent systematic reviews that conclude that the physical activity programmes and/or integrated care delivered in the workplace are effective in supporting the management of CMSDs (Palmer et al. 2015; Seeberg et al. 2019; Sundstrup et al. 2020; Pieper, Schröer, and Eilerts 2019; Geneen et al. 2017).

The exercise interventions reported in this review included specific muscle strengthening, kettlebells training, stretching, and all-round- exercises. Clearly, there are other types of exercises, such as stabilization exercises, proprioceptive re-education and coordination (e.g. tai-chi, yoga), which may be beneficial for chronic musculoskeletal pain but their effectiveness in the workplace has not been evaluated. In addition, none of the studies included psychologically-informed therapy or other psychological interventions (e.g. cognitive behaviour therapy, motivational interviewing) although the link between mental health, stress, anxiety and MSDs is now recognised

(Magnavita et al. 2011). None of the studies in this review reported significant results related to presenteeism rates or the use of a self-management programme alone. A fuller investigation of the self-management interventions used in combination with other factors is required.

There is also a need for more research which takes into account the local socio-political systems. The studies reviewed were conducted in countries with different health systems and it is not clear if employees had access to similar systems of support in the workplace, for example, in the UK, healthcare is usually provided outside the workplace. The heterogeneity of systems represented in this review limits the generalisability of the results to individual countries. It is worth mentioning that no studies conducted in the UK met the review inclusion criteria and only a minority of the participants in the studies reviewed were old enough to be considered part of an ageing workforce. Due to ongoing changes in the retirement policies and challenges in the NHS, it is important to identify and explore what strategies are available in the UK to support employees' managing CMSDs in the workplace and sustain their employability.

Future research needs to carefully choose appropriate study designs that reflect the complexity of the work environment and the biopsychosocial model of health. It was unclear from the studies reviewed whether the types of occupation and the organisation size affected the results. It would also be important to explore the experiences of employees who have been offered a management plan for their condition and to understand the barriers and facilitators of those programmes in the workplace. Finally, the results of this systematic review suggest that there may be benefits in implementing a multi-

component workplace intervention for the management of CMSDs. However, it is crucial to look at this complex topic with an all-inclusive approach, taking into consideration the differences between work environments and types of work, as this will benefit both the stakeholders and the providers.

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Chapter 3: Employees' experiences of managing CMSDs in the workplace: a narrative review

3.1 Introduction

Despite the heterogeneity of studies across a wide range of countries and employment sectors there was a consistency in the results of the systematic review reported in Chapter 2. These quantitative studies investigated the effectiveness of a range of interventions in managing CMSDs in the workplace. In contrast, this chapter presents a critical narrative review and synthesis of qualitative studies that contribute to an understanding of the experiences, perceptions, and attitudes of employees on managing CMSDs. Different approaches to synthesising qualitative studies have been reported, e.g. meta-synthesis, meta-ethnography, or meta-study, by which a rigorous review of qualitative research studies can be achieved. These approaches attempt to aggregate, appraise, and synthesize qualitative findings from many inter-related qualitative studies, detect patterns and relationships between findings, or build on previous conceptualisations and interpretations (Arshed and Danson 2015; Paré and Kitsiou 2017; Onwuegbuzie and Frels 2016; Aveyard 2018).

However, given the study topic and the available literature, a narrative or traditional literature review was chosen as the most appropriate approach for this review. A narrative review involves a comprehensive and critical interpretation of the literature that addresses a selected topic (Aveyard 2018). It can be conducted as a preliminary review of the literature related to a proposed study or as a project itself (Aveyard 2018; Onwuegbuzie and Frels 2016) and

“attempts to summarise what has been written on a particular topic without seeking generalization or cumulative knowledge from what is reviewed”(Paré and Kitsiou 2017:161). This narrative review was chosen as a scoping exercise to identify gaps or inconsistencies in the research literature and provide a better understanding of the study topic of interest. In addition, the qualitative studies selected as relevant to the topic of interest were not compatible with a rigorous systematic review design as they represented a range of methodological approaches and methods and therefore could not be systematically compared or synthesised.

3.2 Methods

A systematic search was conducted to identify all the qualitative studies that focused on the experiences, perceptions, and attitudes of employees with CMSDs. A thematic analytic approach was used to achieve a degree of synthesis and interpret the studies included in the review (Thomas and Harden 2008). An initial general scoping search identified a diversity of qualitative studies (for example, Toye et al. 2013; Oakman, Kinsman, and Briggs 2017 and De Vries et al. 2011) that explored the experiences and the impact of chronic pain (general or musculoskeletal) in addition to the impact of CMSDs at work and the barriers and facilitators of managing these conditions. This initial search provided a basis for selecting the inclusion and exclusion criteria for the narrative review that is reported in this chapter. For example, similar to the quantitative systematic review, it was not possible to focus on an ageing workforce as the studies identified did not define age ranges and included all employees over the age of 18. Finally, the initial scoping search provided the focus required to create the review question and objectives, discuss the

implications of the synthesised review findings, identify gaps in the literature, highlight the design limitations of the studies reviewed and suggest future research.

3.3 Methods

3.3.1 Search strategy

A review needs to have a specific, clear and focused question to guide the exploration of the phenomenon of interest and the synthesis of qualitative findings (Booth 2006; Booth et al. 2019; Ring et al. 2011). After considering other frameworks, I chose to use the SPIDER framework (Setting/Sample, Phenomenon of Interest, Design, Evaluation, Research Type) to structure the review question (Table 3.1) and to clarify its main concepts (Booth 2006; Cooke, Smith, and Booth 2012). The question “How do employees with CMSDs experience the management of their condition in the workplace” was created, and the criteria used to include and exclude studies were identified (Stern, Jordan, and McArthur 2014). The main objectives of this review were to understand what employees perceived as a supportive experience in managing CMSDs, what prevented them from effectively managing the condition, and what influenced the management of their condition.

Table 3.1: Use of the SPIDER Framework to create a qualitative review question

Setting/Sample	Any workplace environment/employees with CMSDs
Phenomenon of Interest	Experience any work strategy offered and/or used to manage CMSDs
Design	Interviews, focus groups
Evaluation	Experiences, attitudes, perspectives
Research type	Qualitative studies, mixed methods research studies

3.4 Selection of studies

3.4.1 Inclusion criteria

Qualitative research and qualitative components of mixed methods research studies published in peer-reviewed journals that explored adult employees' experiences of managing chronic non-malignant musculoskeletal pain at work were included in the review. Chronic musculoskeletal disorders were defined as conditions lasting for ≥ 3 months. Studies qualified for this review were published after 2012.

3.4.2 Exclusion criteria

The exclusion criteria included studies that investigated workplace interventions that exclusively focused on injury prevention or return-to-work. Studies that explored acute MSDs, neurological pain (e.g. stroke, multiple sclerosis), dental, menstrual pain, or other serious pathologies were excluded from this review. The initial scoping search highlighted that RTW intervention studies included employees with long-term absence and sickness leave due to acute, chronic, or work-related injuries. These programmes frequently stop when the employee returns to work without further assessment of their current work ability or other management strategies related to the ongoing chronic condition being offered to them. Prevention of injury studies mostly included interventions aimed at healthy populations and were mainly related to wellbeing initiatives. However, studies that focused on both RTW strategies and management strategies were included in the review. Three meta-syntheses (Liedberg et al. 2021; Devan et al. 2018; Snelgrove and Liossi 2013) and three meta-ethnographies (Toye et al. 2013; Toye et al. 2017; Toye et al. 2016) were

identified in the initial scoping exercise, but these were excluded from the narrative review because the studies included had been conducted in the decade before 2012 (Snelgrove and Liossi 2013; Toye et al. 2013). The studies also focused on employees' experiences after experimental trials or evaluating self-management interventions (Liedberg et al. 2021; Devan et al. 2018). They also aimed to develop a conceptual understanding of living with chronic non-malignant pain (Toye et al. 2017). One objective of the meta-ethnography (Toye et al. 2016) was to explore barriers to staying in work with MSK pain which was relevant to this study. However, the studies that Toye et al. (2016) included in their review had already been identified in the initial scoping search. As a result, the decision was made to include only these primary research studies, and not the meta-ethnography, in the narrative review.

3.5 Screening

The literature search focused on articles published between 2012 and 2021, and was conducted using the following databases: MEDLINE, SCOPUS, CINAHL, AMED, PsycINFO (example provided in Appendix 3.1). Qualitative systematic reviews that were currently 'in progress' or had been published were accessed through PROSPERO. A combination of free-text terms and thesaurus terms or subject headings were generated to access relevant qualitative studies. Search strategies used Boolean operators (AND/OR/NOT), Subject Headings, different spellings, acronyms, and wild cards. Lastly, Scopus was used to check the reference list of the included articles and identify qualitative reviews that may have been missed or identify articles that have been cited more recently.

3.6 Results

The initial search identified a total of 206 references: 5 references in AMED, 46 in Academic Search Complete, 75 in MEDLINE, 48 in CINAHL and 32 in PsycINFO. The articles were screened based on their title, abstract, study design and relevance. After removing duplicates and refining the search results, 78 references remained (Figure 3.1). Articles were then screened again in more detail by, when necessary, reading the full-text article. In this way, 37 full-text articles were read. Only 7 met the established inclusion and exclusion criteria and these were included in the review. Hand-searching reference lists identified 7 additional studies, and these were also assessed. One of these articles was included in the final review. In summary, 8 articles were included in the narrative review.

3.7 Characteristics of selected studies

The key characteristics of the included papers are outlined in Table 3.2. Studies were conducted in a variety of geographical settings and focused on both female and male employees over the age of 18 with chronic musculoskeletal conditions or chronic musculoskeletal pain. The ages of the study participants varied considerably, therefore, a general term of “adult employees” was used in the review. The majority of the studies included more female than male participants. In total 159 participants (58 males and 101 females) contributed to the eight studies which were included in the narrative review.

Figure 3.1: PRISMA Flow chart of study identification, selection and synthesis

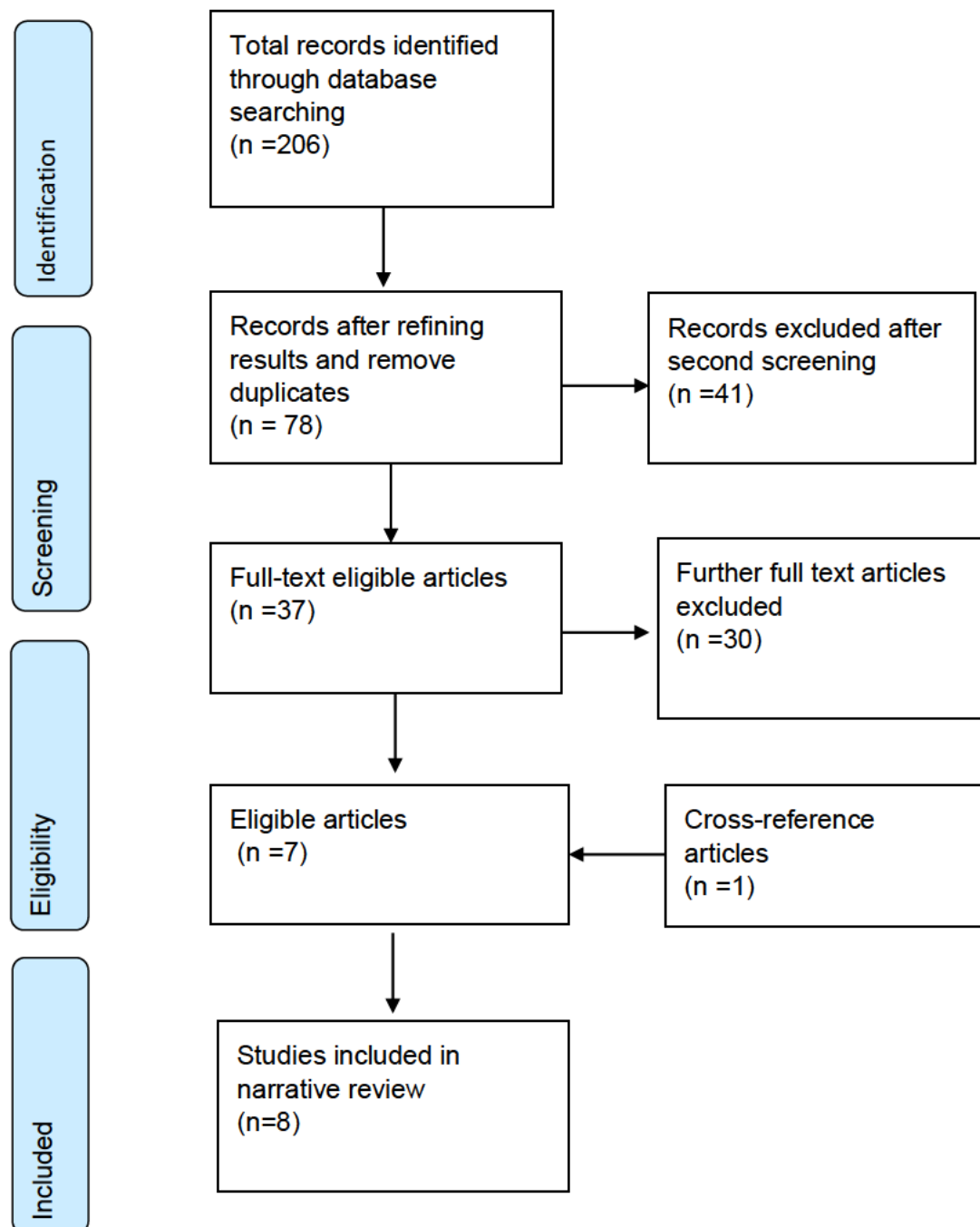


Table 3.2: Summary Table of Reviewed Literature

Authors	Country	Focus	Methodology	Methods	Participants	Data analysis	Findings/main themes
Agaliotis et al. 2018	Australia	Explore the perspectives of employees with chronic knee pain with respect to the barriers, concerns, and coping strategies used	Not specified	Focus groups	<p>Employees with chronic knee pain</p> <p>N=17 (4 males, 7 females)</p> <p>Age range: 51-77 Mean: 60,6</p> <p>Private and public sector</p> <p>Professional and manual occupation</p>	Systematic analysis used in grounded theory approach	<p>Barriers to work productivity due to knee pain</p> <p>Strategies to improve work productivity</p> <p>Future recommendations about sustainable work</p>
Coole, Watson, and Drummond 2010	UK	Explore employees' experiences and perceptions of working with back pain prior to attending a rehabilitation programme.	Not specified	Semi-structured interviews	<p>Adult employees with low back pain</p> <p>N=25 (12 males, 13 females)</p> <p>Age range: 22-58 Mean: 44,7</p> <p>Self-employed, private and public sector from large and medium-sized companies.</p> <p>Professional, unskilled and manual occupation</p>	Thematic analysis	<p>Occupational Health assistance</p> <p>Assistance from employers/managers</p> <p>Work modifications and patient control</p>

De Vries et al. 2011	Netherlands	Explore the motives of people with chronic musculoskeletal pain	Not specified	Semi-structured interviews	<p>Adult employees with chronic musculoskeletal pain</p> <p>N=21 (9 males, 12 females)</p> <p>Age range:30-60 Mean: 47</p> <p>Professional, unskilled and manual occupation</p> <p>Self-employed, private and public sector</p>	Thematic analysis	<p>Motivators to stay at work: work as value, work as therapy, work as income generator and work as responsibility</p> <p>Success factors: personal characteristics, adjustment latitude, coping with pain, use of healthcare services, and pain beliefs</p>
Holland and Collins 2016	UK	Explore experiences of employees with rheumatoid arthritis	Not specified	Semi-structured interviews	<p>Adult employees with rheumatoid arthritis</p> <p>N=11 (2 males, 9 females)</p> <p>Age range:32-58 Mean: 42,4</p> <p>Self-employed, private and public sector</p> <p>Professional and semi-skilled occupations</p>	Thematic analysis	<p>The perceived importance of work</p> <p>Seeking normality after first onset</p> <p>Keeping productive, and employed, through workplace adjustments</p> <p>Sickness absence policies causing pressure to work</p>
Hutting et al. 2014	Netherlands	Explore the experiences of employees' people who suffer from complaints of the arm, neck, or shoulder	Not specified	Focus groups (and three individual interviews due to participants' attendance)	<p>Adult employees with complaints of the arm, neck, or shoulder</p> <p>N=15 (1 male, 14 females)</p> <p>Age range:25-56</p>	Conventional content analysis	<p>Ideas about the causes of complaints</p> <p>Dealing with non-visible complaints</p> <p>Experiences with different forms of treatment</p>

					Mean: 46,9 Professional and semi-skilled occupations Private and public sector		Workplace adjustments
Kalsi et al. 2016	UK	Explore patients' beliefs and attitudes towards return-to-work	Not specified	Focus groups	Adult employees with chronic pain N=17 (8 males, 9 females) Age range: 18-34 Mean: Not available	Thematic analysis	Living with chronic pain The fine balance between chronic pain and return to work Work is a beautiful thing when you have it The luck of the draw
Oakman, Kinsman, and Briggs 2017	Australia	To explore the support used by employees to assist them in maintaining productive employment	Mixed Methods Research	Questionnaire followed by semi-structured interviews	Adult employees with chronic musculoskeletal pain N=35 (14 males, 21 females) Age range: 25+ Mean: 44,6 Private and public sector	A thematic approach using grounded theory principles. Inductive content analysis	Barriers to working productively Enablers to working productively included Disclosing condition at work
Wynne-Jones et al. 2011	UK	Explore the beliefs and attitudes of managers and employees with	Mixed Methods Research	Questionnaire and the semi-structured interviews	Adult employees and managers with chronic musculoskeletal pain N=18 employees (8 males, 10 females)	Thematic analysis	Impact of health Moral aspects of absence and attendance

		musculoskeletal pain about sickness absence, presenteeism and return-to-work			Age range: Not available Mean: 49,7 Public sector Wide range of occupations		Absence management policies and return-to-work
--	--	--	--	--	--	--	--

3.8 Assessing the rigour of research

It is essential to assess the quality of any published research before trusting its findings. In qualitative research, 'trustworthiness' has become an important concept as it uses qualitative terms (as opposed to those developed for quantitative research) to describe and assess the rigour of research (Guba and Lincoln 1994; Given 2008). Trustworthiness has been defined as the extent to which a researcher can persuade audiences that the findings are "*worth paying attention to*" (Lincoln and Guba 1985:290-300). It is a concept commonly explained using the criteria of credibility, transferability, dependability, confirmability and reflexivity (Lincoln and Guba 1985), enabling qualitative researchers to move away from the terms traditionally associated with quantitative research that were previously applied to qualitative research.

Using a checklist, commonly referred to as a critical appraisal tool, is a practical way to assess the quality of qualitative research (Gough, Thomas, and Oliver 2012). Such tools consist of questions that provide a transparent approach for judging published research (Centre for Reviews and Dissemination 2009). Many qualitative checklists have been proposed, but these vary in content and consistency. However, they can help determine whether the study design and analysis processes are appropriate for a qualitative approach and the extent to which the implementation of the study was influenced by the researcher or other factors (Dixon-Woods 2004; Campbell et al. 2011).

Hannes, Lockwood, and Pearson (2010) compared three qualitative appraisal instruments: the Critical Appraisal Skills Programme checklist (CASP),

the Evaluation Tool for Qualitative Studies (ETQS), and the Joanna Briggs Institute Critical Appraisal tool (JBI-QARI). The authors found that CASP was less sensitive in determining the rigour of studies, whereas the other two were equally good in assessing qualitative research. However, the JBI-QARI provided congruency and it was the most coherent and clear in relation to questions about the philosophical perspective, methodology, and study design. Therefore for the purpose of this review, the JBI-QARI was selected to guide appraisal of the included studies (Lockwood, Munn, and Porritt 2015; Porritt, Gomersall, and Lockwood 2014). A summary of the critical appraisal of the reviewed articles using the JBI-QARI is provided in Table 3.3. The full JBI-QARI tool can be found in Appendix 3.2.

While no studies were excluded on the grounds of quality due to the potential risk of losing valuable insights, the reader should be aware that not all studies included were of the same methodological standard. All the studies with the exception of two (Oakman, Kinsman, and Briggs 2017; Wynne-Jones et al. 2011), did not discuss the methodology on which their studies were based. All the qualitative studies failed to show congruity between the stated methodology and the study aim and objectives. On the other hand, the MMR studies gave sufficient detail about MMR as a methodology and the design elements.

Two articles (Kalsi et al. 2016; Hutting et al. 2014) did not include a discussion of the role of the researcher in designing and implementing the study or of the study limitations. As a result, it was not possible to judge the degree to which the research or other factors influenced the study design and analysis process. For example, in one study (Hutting et al. 2014), participants who could not attend the focus groups were offered the option of an individual interview.

However, the researchers did not explain this decision, for example, how it was implemented or the challenges faced. In addition, the authors who did discuss the study limitations did not demonstrate a thorough understanding of qualitative research. For example, Coole, Watson, and Drummond (2010) and De Vries et al. (2011) discussed their study findings in terms of 'generalisation', which is a quantitative concept that is generally considered not appropriate or achievable in qualitative research.

As the qualitative studies did not sufficiently justify the choice of data collection methods, it was difficult to assess whether the methods chosen provided the best fit. Similarly, none of the authors discussed the researchers' roles and responsibilities in the research or how their preconceptions, beliefs and values about the research topic and participants may have influenced the decisions taken in the study design and the interpretation of the findings. In addition, none of the study reports provided details about the participant recruitment process and the development of the interview guide. For example, Oakman, Kinsman and Briggs (2017) explained that they changed the interview questions after the first two participants were interviewed but did not frame this decision as an interview pilot test nor was it clear whether data from these two interviews were analysed and included in the study findings. Details about the participants' characteristics were also missing. For example, sample size decisions were not justified by the authors except in one study (Coole, Watson, and Drummond 2010) and the participant age range varied between over 20 (Oakman, Kinsman, and Briggs 2017; Coole, Watson, and Drummond 2010; Kalsi et al. 2016; Hutting et al. 2014) over 30 (Holland and Collins 2016, De Vries et al. (2011) and over 50 (Agaliotis et al. 2018). Only one study (De Vries

et al. 2011) provided detailed information about the participant recruitment process and interview preparation.

Participants' quotes were limited or missing in three studies (Agaliotis et al. 2018; Hutting et al. 2014; Oakman, Kinsman, and Briggs 2017) which challenged the 'credibility' of the interpretation and representation of the findings. As a result, it was difficult to determine if the participants' voices were adequately represented in these studies. In addition, these authors did not provide a transparent description of the steps taken in analysing and interpreting their respective data. All the studies reviewed provided an outline of the study strengths and limitations. The qualitative components of the two mixed methods research studies included in the review (Wynne-Jones et al. 2011; Oakman, Kinsman, and Briggs 2017) were of moderate quality, whereas the quality of the six qualitative research articles was assessed as poor to moderate.

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Table 3.3: Critical appraisal of the reviewed studies using the Joanna Briggs Institute Critical Appraisal tool

Authors	Is there congruity ... methodology?	Is there congruity ... objectives?	Is there congruity ... collect data?	Is there congruity ... analysis of data?	Is there congruity ... results?	Is there a statement... culturally or theoretically?	Is the influence.... addressed?	Are participants... adequately represented?	Is the research ethical according to... body?	Do the conclusions ...of the data?	Overall appraisal
Agaliotis et al. 2018	No	Yes	Yes	UC	UC	No	No	No	Yes	UC	Limited information on methodology and theoretical perspectives. Participants' voice and researchers' position is not adequately represented. Limited illustrative quotes.
Coole, Watson, and Drummond (2010)	No	UC	UC	UC	UC	No	No	Yes	Yes	Yes	No information on methodology, theoretical perspectives and researchers' position and influences. Moderate description of participant's recruitment.
De Vries et al. 2011	No	UC	UC	UC	UC	No	No	Yes	Yes	Yes	No information on methodology and theoretical perspectives. Moderate description of methods but limited understanding of qualitative research.
Holland and Collins 2016	No	UC	UC	UC	UC	No	No	Yes	Yes	Yes	No information on methodology and theoretical perspectives. Moderate description of methods and analysis of the results.

Hutting et al. 2014	No	No	UC	UC	UC	No	No	UC	Yes	UC	No information on methodology and theoretical perspectives. Limited description of methods and analysis of the results. Questionable member checking (a year after the focus group). Concerns about the design of the study.
Kalsi et al. 2016	No	UC	UC	UC	UC	No	No	Yes	Yes	UC	No information on methodology and theoretical perspectives. Moderate description of methods and analysis of the results.
Oakman, Kinsman, and Briggs 2017	Yes	Yes	Yes	Yes	UC	No	UC	UC	Yes	Yes	Moderate description of methods and analysis of the results. Information given but not in great detail. Unclear about pilot testing
Wynne-Jones et al. 2011	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Moderate description of MMR methods.

Note: UC=unclear

3.9 Synthesising the findings

Thomas and Harden's (2008) approach to the synthesis of qualitative research findings, which they call 'thematic synthesis', was used to guide this phase of the narrative review. Each paper was carefully reviewed and relevant information related to the review question was extracted. This included key concepts, phrases and participant data (quotes) used by the authors to describe and explain their findings in the article text and in any tables or appendices, which Thomas and Harden call "verbatim findings" (2008:8). Thomas and Harden (2008:7) explained that thematic synthesis occurs in three stages: "*the free line-by-line coding of the findings of primary studies, the organisation of these 'free codes' into related areas to construct 'descriptive' themes and the development of 'analytical' themes*". The selected findings were uploaded onto NVivo 13, which supported easier access to the original studies whilst allowing the creation of memos and other developing ideas.

The first step of the synthesis process was to extract the 'verbatim findings' that related in anyway to the review question: "How do employees with CMSDs experience the management of their condition in the workplace?". A few studies directly assessed the question, and I revisited these studies several times to capture all relevant findings accurately. After importing these in NVivo 13, I carefully coded "*each line of text according to its meaning*" (Thomas and Harden 2008:8). Every sentence or phrase was assigned at least one code, and each code was annotated as necessary for further clarification. Next, I looked for similarities and differences between the newly created codes to begin the process of grouping them into subthemes. Finally, new codes (descriptive titles) were created to capture the meaning of larger groupings of initial codes

(Thomas and Harden 2008:9). These three descriptive themes were: Barriers to the management of CMSDs in the workplace, workplace behaviours, and strategies used to manage the condition. Figure 3.2 illustrates how the subtheme groupings contributed to the descriptive theme 'barriers to management of CMSDs in the workplace'.

Thomas and Harden (2008) describe the last step in thematic synthesis as 'generating analytic themes.' In their view, the purpose of analytic themes, unlike the descriptive themes, is to "*go beyond the findings of the primary studies [in order to] generate additional concepts, understandings or hypotheses*" (Thomas and Harden 2008:9), and they consider this to be the defining characteristic of synthesis. This step is considered to be the most difficult as "*qualitative synthesis is, potentially, the most controversial, since it is dependent on the judgement and insights of the reviewers*" (Thomas and Harden 2008:10). This step was achieved by considering the review question and objectives and also the implications of the descriptive findings for employees with a CMSD. Several conceptual maps and diagrams were created to help me elevate the descriptive themes and 'go beyond' the findings of the primary studies (Thomas and Harden 2008).

This cyclical process was repeated until the new themes were sufficiently abstract to describe and explain all the initial descriptive themes, the inferred barriers and facilitators and implications for intervention development. The final analytical themes were: Influence of work environment, employees actively seek ways to manage their condition and the optimising the relationship between employees and manager. Figure 3.3 illustrates the final analytical

themes in a conceptual map and Table 3.4 provides a clear description of the analytical themes.

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Figure 3.2: Relationships between subthemes and the descriptive theme 'barriers towards the management'

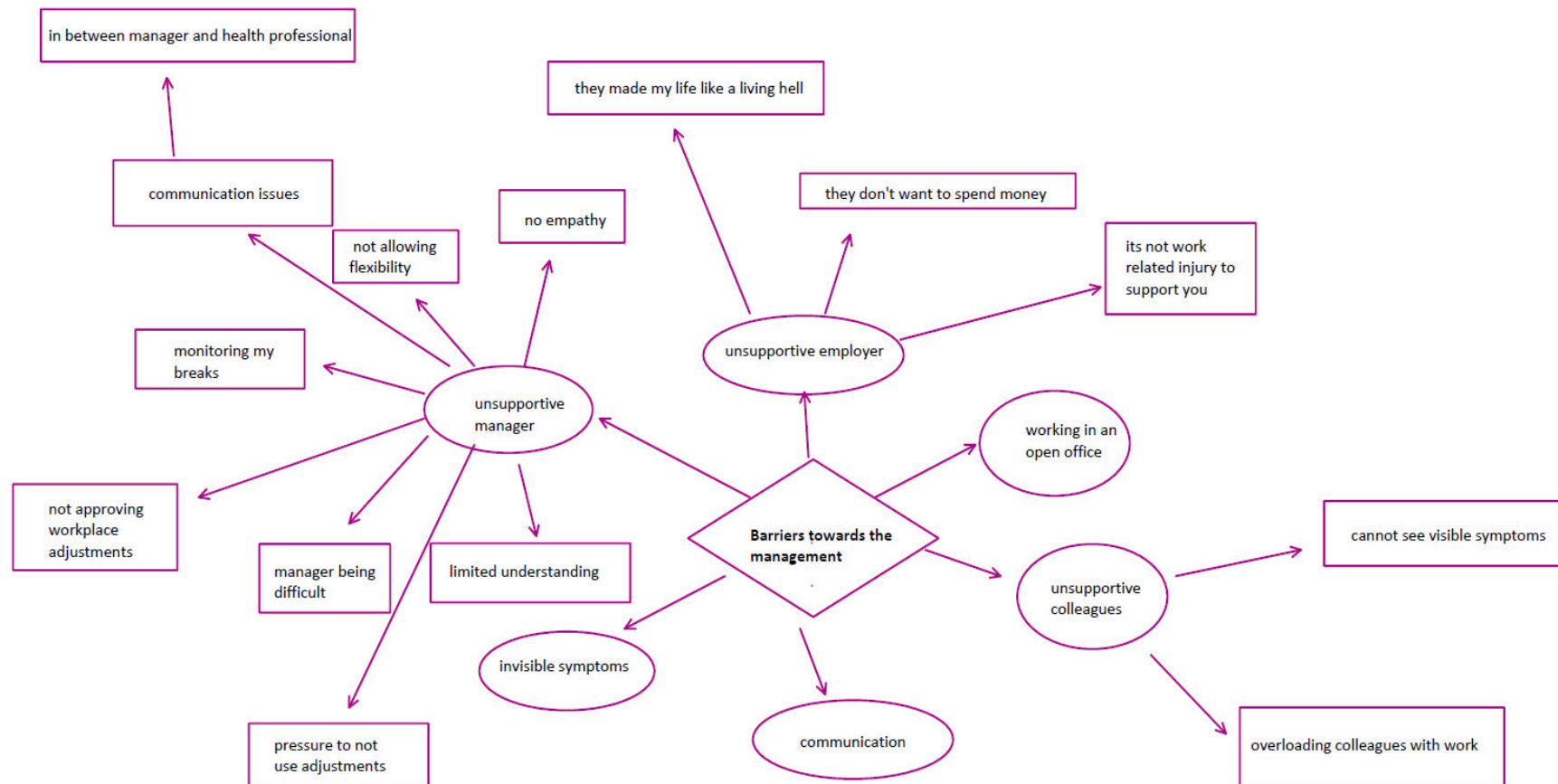


Figure 3.3: Conceptual map: Generation of the final analytical themes

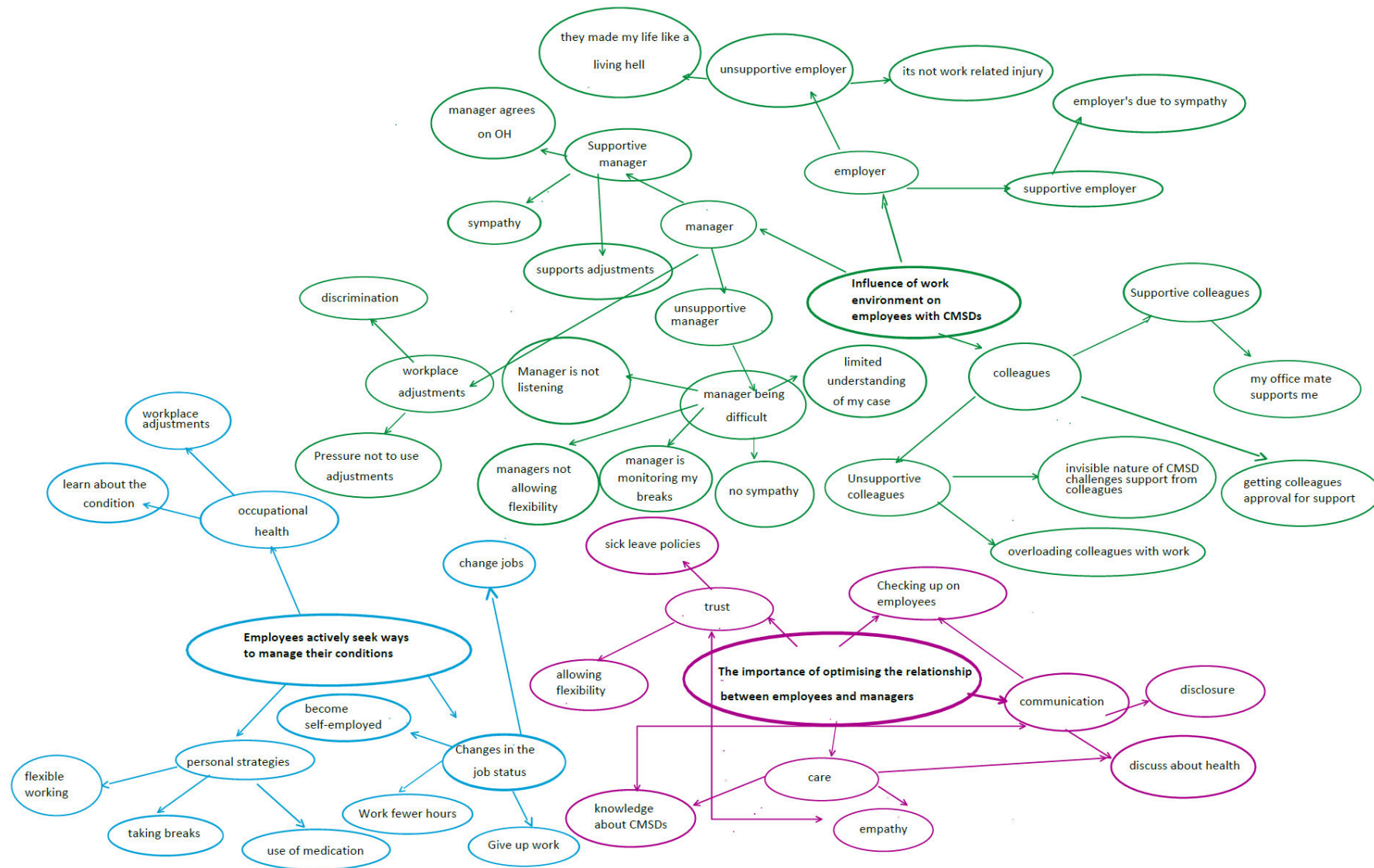


Table 3.4: List of Analytical themes and subthemes

Employees actively seek ways to manage their conditions

- | | |
|-----------------------------|-----------------------------|
| ❖ Occupational health | ❖ Changes in the job status |
| ➤ Learn about the condition | ➤ Become self-employers |
| ➤ Workplace adjustments | ➤ Change jobs |
| ❖ Personal strategies | ➤ Give-up work |
| ➤ Flexible Working | ➤ Work fewer hours |
| ➤ Taking breaks | |
| ➤ Use of medication | |

Influence of work environment on employees with CMSDs

- | | |
|----------------|----------------|
| ❖ Colleagues | ❖ Employer |
| ➤ Supportive | ➤ Supportive |
| ➤ Unsupportive | ➤ Unsupportive |
| ❖ Manager | |
| ➤ Supportive | |
| ➤ Unsupportive | |

The importance of optimising the relationship between employees and managers

- | | |
|------------------------|----------------------------|
| ❖ Care | ❖ Trust |
| ➤ Empathy | ➤ Allowing Flexibility |
| ➤ Knowledge of CMSDs | ➤ Checking up on employees |
| ❖ Communication | ➤ Sick leave policies |
| ➤ Discuss about health | |
| ➤ Disclosure | |

3.10 Results: Analytical themes

The eight articles reviewed reported studies that explored employees' experiences of managing CMSDs at work. Further interpretation of the employees' perspectives supported the creation of three analytic themes, which provided a more in-depth discussion of these experiences.

Influence of work environment on employees with CMSDs: managers' behaviours

Participants in the studies reviewed, experienced both supportive and unsupportive behaviours from colleagues, employers, and managers. The first subtheme related to the managers' behaviours towards employees with CMSDs in the work environment. In general, participants in all the studies had worked with supportive managers, but a number of more negative experiences were consistently discussed. Managers were perceived as being unhelpful and showing a limited understanding of the employees needs. In contrast, managers who had themselves experienced a musculoskeletal problem were empathetic (Coole, Watson, and Drummond 2010; Holland and Collins 2018). It was important to employees that managers could recognise the impact of a MSK condition and approve adjustments or facilitate some flexibility at work (Coole, Watson, and Drummond 2010; Holland and Collins 2018). For example, one participant in Holland and Collins' (2016) study explained that the manager allowed her to change her working hours when she was not feeling well and, in that way, she was able to maintain her productivity levels and successfully manage her flare-ups.

Some studies reported that employees found managers generally unsupportive and difficult to work with (Agaliotis et al. 2018; Oakman, Kinsman, and Briggs 2017; Wynne-Jones et al. 2011; Coole, Watson, and Drummond 2010). In one study, participants shared examples of managers micromanaging their breaks and their time away from their desks (Coole, Watson, and Drummond 2010). Managers were perceived as not taking the time to engage in conversations with employees about their health and work-related needs (Agaliotis et al. 2018; Oakman, Kinsman, and Briggs 2017; Wynne-Jones et al. 2011; Coole, Watson, and Drummond 2010). Finally, some studies reported that managers had refused to provide workplace adjustments or had decided that employees did not need these, which the employees found patronising (Agaliotis et al. 2018; Oakman, Kinsman, and Briggs 2017; Wynne-Jones et al. 2011; Coole, Watson, and Drummond 2010). For example, in one study (Agaliotis et al. 2018:386), a participant reported that the manager refused to provide the suggested work adjustments due to the ‘invisible’ nature of employee’s symptoms: *“it’s reverse discrimination, but how can you beat it? You can’t physically say ‘here’s my pain’ and look at it even though it hurts”*.

Influence of work environment on employees with CMSDs: employers’ behaviours

The second subtheme related to employers’ behaviours and attitudes. On the whole, organisations offered employees access to health services, e.g. occupational health assessments or physiotherapy, but this access was intended only to support a RTW process and not the long-term management of their condition (Wynne-Jones et al. 2011; Coole, Watson, and Drummond 2010). Some authors reported resistance from employers when employees

requested flexible working hours and workplace modifications (Coole, Watson, and Drummond 2010; Kalsi et al. 2016). For example, a participant in Coole, Watson, and Drummond's (2010) study explained that the employers were not prepared to fund the recommended ergonomic equipment.

Influence of work environment on employees with CMSDs: colleagues' behaviours

The last subtheme revealed the positive and negative interactions that employees experienced with their colleagues. A few studies reported positive experiences from co-workers who either helped employees with their tasks (Coole, Watson, and Drummond 2010) or showed understanding when employees were unwell and could not perform physical job tasks adequately (Agaliotis et al. 2018). However, some employees described instances where they were not believed by their work colleagues (Hutting et al. 2014), or they identified obstacles due to the work culture or the excessive workload (Wynne-Jones et al. 2011). An example participant quote from Hutting et al.'s (2014:8) study illustrates both positive and negative support provided by colleagues:

If I let anyone know that I am having problems, then my colleagues are very considerate or want to take over some of my workloads. But because my problem is not always so evident, the help from my colleagues is not consistent.

Employees actively seek ways to manage their conditions: Personal strategies

This theme highlighted that employees were keen to take responsibility for managing their CMSDs at work and identified some of the strategies they used. The findings of the first subtheme related to the personal strategies employees used (Agaliotis et al. 2018; Oakman, Kinsman, and Briggs 2017;

Hutting et al. 2014; De Vries et al. 2011; Holland and Collins 2018; Coole, Watson, and Drummond 2010). In general, employees found effective the professional advice given, for example, taking frequent breaks from a workstation or using ergonomic equipment (Coole, Watson, and Drummond 2010; Hutting et al. 2014; De Vries et al. 2011). However, as the adjustment latitude⁵ was not the same in all studies, employees explained that the culture of the organisation or the nature of a job might affect the management of CMSDs (Oakman, Kinsman, and Briggs 2017; Coole, Watson, and Drummond 2010; Hutting et al. 2014; De Vries et al. 2011; Holland and Collins 2016; Kalsi et al. 2016). Therefore, it is important to explore how the workplace environment affects the opportunities that employees with CMSDs had to change their work effort when they were unwell.

The majority of the reviewed studies illustrated that pain relief medication allowed employees to work better and reduce the need to take frequent or long-term sick leave (Oakman, Kinsman, and Briggs 2017; De Vries et al. 2011; Holland and Collins 2016; Kalsi et al. 2016). However, it was unclear whether these pain-relief medications were prescribed by a doctor or purchased over-the-counter. It is also unclear whether the positive outcome was a sole result of the medication or if employees had combined them with other interventions. Some of the reviewed studies illustrated that employees were reluctant to take medications due to their side effects (Oakman, Kinsman, and Briggs 2017; De Vries et al. 2011; Kalsi et al. 2016). If there are no other interventions to support employees in managing their condition, then the use of medications may have

⁵ Adjustment latitude is defined as the possibility to temporarily adjust one's work demands to the loss of function due to illness or disease (Johansson and Lundberg 2004)

adverse effects on their work abilities and further exploration of this issue is needed. For example, a participant in Kalsi et al. (2016:104) explained that taking pain relief was his only option:

I had accepted painkillers as my way of managing and my life. If I had some input from my GP or someone else about coping skills...maybe I would not have wasted five or six years...I would be in a better position, I could have been in a full-time job.

Employees actively seek ways to manage their conditions: Occupational health

Employees accessed a range of different services to support the management of their CMSD and a discussion of these formed the second subtheme (Wynne-Jones et al. 2011; Oakman, Kinsman, and Briggs 2017; Coole, Watson, and Drummond 2010; Hutting et al. 2014; De Vries et al. 2011; Holland and Collins 2016, Kalsi et al. 2016). On the whole, these findings highlighted that employers provided services, which were viewed positively by employees, from the occupational health service (OHS) or other private healthcare professionals (HCPs), such as, a physiotherapist, podiatrist or occupational therapist (De Vries et al. 2011; Oakman, Kinsman, and Briggs 2017; Coole, Watson, and Drummond 2010; Hutting et al. 2014; Holland and Collins 2016). It is important to note that the study participants were employees participating in RTW programmes and had access to an on-site OHS or worked in organisations that offered private healthcare services. The employees in one study reported that they self-referred to these services (Coole, Watson, and Drummond 2010) and only two studies explained that accessing these services involved the line manager (Coole, Watson, and Drummond 2010; Wynne-Jones et al. 2011). In most of the studies, no explanation of how employees were

referred or obtained an appointment for these services was provided (Oakman, Kinsman, and Briggs 2017; Hutting et al. 2014; De Vries et al. 2011; Holland and Collins 2016). As employees perceive these services to be useful and effective, it is important to explore the role of organisations in providing appropriate and easy access to OHS or other HCPs.

Finally, most of the studies reviewed highlighted the strategies provided by healthcare professionals, which facilitated the management of employees' conditions. For example, some studies discussed the provision of ergonomic equipment (e.g. standing desk, ergonomic chair) or workplace assessments that allowed reasonable adjustments at work (Oakman, Kinsman, and Briggs 2017; Hutting et al. 2014; Coole, Watson, and Drummond 2010; Holland and Collins 2016). A few studies (Kalsi et al. 2016; Hutting et al. 2014; Oakman, Kinsman, and Briggs 2017) highlighted that HCPs were able to effectively explain to employees the nature of their CMSD and the impact at work, provide them with educational resources (e.g. leaflets) and signpost them to online resources and websites. One participant, for example, explained that learning about chronic musculoskeletal pain allowed her to understand and control it better (Hutting et al. 2014).

Employees actively seek ways to manage their conditions: Changes in the job status

The third subtheme illustrated the need for a job change in order to manage CMSDs more effectively (Agaliotis et al. 2018; Oakman, Kinsman, and Briggs 2017; Coole, Watson, and Drummond 2010; Hutting et al. 2014; De Vries et al. 2011). Some study findings suggested that the negative impact that CMSDs had on employees' mental and physical health, was reduced when they changed jobs (Hutting et al. 2014; De Vries et al. 2011). Other authors reported

that employees who experienced reduced work ability preferred part-time work (Oakman, Kinsman, and Briggs 2017; Hutting et al. 2014). In addition, becoming self-employed was a preferred choice in studies where employees felt unsupported in their workplace (Coole, Watson, and Drummond 2010; De Vries et al. 2011). Finally, Agaliotis et al. (2018) suggested that managing a chronic condition was only possible for some employees if they gave up work. As one participant in their study said: “*I had to give it up [previous job], I could hardly walk*”.

The final analytical theme highlights the importance of the managers role in supporting employees with CMSDs. All the studies revealed how effective communication, trust between the employee and manager and an empathetic and caring approach influences this key relationship and the support provided to employees.

The importance of optimising the relationship between employees and managers: communication

Studies included in this review highlighted how effective communication mainly associated with managers’ willingness (or not) to discuss employees’ circumstances (Wynne-Jones et al. 2011; Oakman, Kinsman, and Briggs 2017; Hutting et al. 2014; Agaliotis et al. 2018). For example, a participant in Hutting et al’s study (2014) explained that her manager avoided having health conversations with her and, as a result, she had not received any support. In other studies, poor communication discouraged disclosure of the CMSD (Oakman, Kinsman, and Briggs 2017; Agaliotis et al. 2018). On the other hand, a participant in Oakman, Kinsman, and Briggs’ (2017) study explained that

having a good relationship with the manager enabled employees to feel more comfortable about discussing health matters with them:

It's actually much better for me to be able to speak up rather than keep it to myself and pretend it's not there ... then my employer has more opportunity to consider any additional support.

The importance of optimising the relationship between employees and managers: care

Five of the included studies discussed managers' perceived duty of care to employees with CMSDs (Wynne-Jones et al. 2011; Coole, Watson, and Drummond 2010; Holland and Collins 2016; Kalsi et al. 2016; Oakman, Kinsman, and Briggs 2017). In some studies, the impression was that managers who lacked interest, experience or understanding of CMSDs were perceived to have a negative impact on how employees managed the condition, e.g. by ignoring useful advice provided by OHS, refusing to institute flexible alternatives at work (such as, frequent breaks away from the desk) and, in general, such managers contributed to a more hostile work environment (Wynne-Jones et al. 2011; Coole, Watson, and Drummond 2010; Holland and Collins 2016; Kalsi et al. 2016). For example, a participant in Kalsi et al.'s (2016) study explained that her manager did not take into consideration the advice given to her by the OHS and refused to allow frequent breaks away from their desk. On the other hand, those managers who experienced personal health issues presented as empathetic and supported employees with CMSDs (Coole, Watson, and Drummond 2010; Holland and Collins 2016; Kalsi et al. 2016). As a participant in Coole, Watson, and Drummond (2010) highlighted: *"I'm lucky that my line manager has a back problem as well, so he knows what I go through."*

The importance of optimising the relationship between employees and

managers: trust

Finally, some studies illustrated the importance of creating an environment of trust between employees with CMSDs and managers (Coole, Watson, and Drummond 2010; Holland and Collins 2016; Wynne-Jones et al. 2011). These studies highlighted that not all managers had the employees' best interests in mind when offering support strategies. For example, a participant in Coole, Watson, and Drummond's (2010) study explained that although her manager allowed some flexibility concerning the breaks she could take, he seemed concerned that she was moving around too much or too far from her desk during her breaks. Study authors (Coole, Watson, and Drummond 2010; Holland and Collins 2016; Wynne-Jones et al. 2011) identified several reasons why the important relationship between the manager and employee could deteriorate. For example, strict sick leave policies that result in employees feeling that their job stability was threatened if they failed to RTW in the timeframe outlined in the policy or when managers monitored their breaks or consistently pressured those on sick leave to return-to-work. A participant in Holland and Collins' (2016) study reported that:

Two weeks after I'd returned to work [I had] another absence review meeting and I was advised that my reviews had to go to the head of a service for him to make a decision on whether I'd be dismissed.

3.11 Discussion

This narrative review synthesised eight studies that explored the positive and negative experiences of employees who managed CMSDs at work. Three analytical themes were identified: influence of work environment, employees

actively seek ways to manage their condition and optimising the relationship between employees and manager. The dynamic relationship between these three linked themes appears to be highly influential in how employees navigate the obstacles they face in the workplace.

The review suggests that the ability to negotiate workplace support and manage CMSDs at work is influenced by the cultural and social environment of the organisation. It also highlights those environments are determined by the employer, the manager and the co-workers. Social support is an important determinant of health and wellbeing (Carpiano 2008). In terms of employees' wellbeing, social relationships can influence the resources provided to support employees' working ability and needs (Erdogan and Bauer 2015; Ferreira et al. 2015; Gregory and Osmonbekov 2019; Gilbreath and Karimi 2012).

In this review, managers were perceived as supportive when they were empathetic, were knowledgeable about the impact of CMSDs at work, facilitated flexible working patterns and provided a range of ergonomic resources and strategies. However, the review highlighted that the nature of the support was very different from one manager to another. For example, managers may choose to comply with organisational policies and the provision of workplace adjustments (Cunningham, James, and Dibben 2004). However, the support required by people who have a CMSD is more individual and depends on managers' willingness to negotiate and engage with them. Toye et al. (2016) suggested that a supportive work environment, for example, one that provides work modifications, may enable employees with CMSDs to better manage the impact of their condition at work. However, as there is no standard approach or national provision to support CMSDs in the workplace, managers need to be

encouraged to take a more dynamic role and develop sustainable management plans for employees (Silvaggi et al. 2020; Larsen et al. 2018; DWP 2020c).

Current research also suggests that managers, who are experienced by employees as inflexible and unsympathetic, are an obstacle to the RTW process (Grant et al. 2019b) or the management of CMSDs (Summers, Bajorek, and Bevan 2014). This review suggests that managers who had personal experience of a CMSD were more empathetic and more consistently sought to support employees. However, the concepts of empathy or sympathy do not appear to be discussed in previous published qualitative reviews. Therefore, empathy or sympathy should be further explored in relation to work relationships (e.g. with managers, colleagues) to determine how they influence the support and management of CMSDs at work.

The influence of the employer in supporting employees' management of a CMSD in the workplace has not been addressed yet. Qualitative research, to date, has mainly focused on the experience of employees with CMSDs. Similarly, in this narrative review, only two studies (Coole, Watson, and Drummond 2010; Wynne-Jones et al. 2011) discussed the employers perceived behaviour⁶. Recent research illustrates the importance of the employers role and knowledge in facilitating the work careers of employees with chronic conditions in the workplace and the RTW process (Shaw et al. 2016; Jakobsen and Lillefjell 2013; DWP 2017b; Bosma et al. 2021; Grant et al. 2019a). However, employers generally lack understanding about chronic conditions and their impact at work (Grant et al. 2019b; Pescud et al. 2015) and are also poorly

⁶ In the verbatim findings the terms 'employer', 'boss' and 'organisation' were sometimes used interchangeably

informed about the policies that regulate the nature of the support provided (Bosma et al. 2021). Therefore, the employers role in supporting employees with CMSDs at work requires further study.

Co-workers behaviours and attitudes were generally identified as positive only when supporting employees with visible CMSDs. A ‘visible’ disability⁷ can be noticed with a naked eye and is often associated with the use of a mobility aid, wheelchair or assistive device (Gray and Cook 2017). On the other hand, a ‘non-visible’ chronic illness is considered as an unseen or ‘hidden’ condition that is not noticeable or identified by others but has an impact on function and ability and presents the individual with a range of challenges (Disabled World 2020; Vickers 1997; UK Government 2020). Holland and Clayton (2020) synthesised evidence concerning the employment experiences of people with CMSDs in a meta-ethnography qualitative review. The authors synthesised 16 qualitative articles exploring the factors shaping the employment trajectories of those with CMSDs. One of the five identified themes focused on the ‘fluctuating symptoms and uncertainty associated with employees’ conditions which co-workers did not recognise and which caused them to doubt and disbelieve the impact that ‘non-visible’ musculoskeletal conditions have at work. A work environment that promotes fair participation and accepts employees with both visible and non-visible disabilities is necessary to enable employees with CMSDs to fulfil their work roles and responsibilities (de Jong et al. 2015; Vooijs et al. 2017). Further exploration is required about how supportive environments are developed within organisations and how they influence people's work experience with CMSDs.

⁷ Disability is defined as a physical or mental impairment that has a substantial and long-term adverse effect on a person’s ability to carry out normal day-to-day activities (Government Equalities Office 2011)

The review findings indicated that employees with a CMSD were keen to take responsibility for the management of their condition. However, the personal strategies identified were limited in scope and, for example, included the use of medication, frequent breaks, and flexible working hours (if possible). These limited strategies are not congruent with the dimensions that characterise self-management interventions for chronic conditions. As identified by Jonkman et al (2016:35):

Self-management interventions aim to equip patients with skills to actively participate and take responsibility in the management of their chronic condition in order to function optimally through at least knowledge acquisition and a combination of at least two of the following: stimulation of independent sign/symptom monitoring, medication management, enhancing problem-solving and decision-making skills for medical treatment management, and changing their physical activity, dietary, and/or smoking behaviour.

Self-management interventions may enable employees to participate actively and take control of their chronic condition (Jonkman et al. 2016). A greater understanding, therefore, of how these interventions can assist employees in addressing the personal, psychosocial, and biomechanical components of managing a CMSD and how they could be effectively promoted in the workplace would be useful (Hutting et al. 2019; Roquelaure et al. 2020; Trappenburg et al. 2013).

The findings also illustrated that some workplaces offered employees with CMSDs access to an OHS or to private HCPs who could support them after being on long-term sick leave (Wynne-Jones et al. 2011; Oakman, Kinsman, and Briggs 2017; Coole, Watson, and Drummond 2010; Hutting et al. 2014; De Vries et al. 2011; Holland and Collins 2016; Kalsi et al. 2016). Professional advice and resources would appear to be essential elements in

designing an effective management programme (Johnston et al. 2013; Hutting et al. 2019). For example, healthcare professionals can create plans tailored to an employee's needs that include supportive and meaningful strategies and assist them to stay at work longer (NICE 2019; Crawford et al. 2020; Tindle et al. 2020). However, it was unclear from this review how accessible these services were to employees with CMSDs. In addition, these findings suggested that professional recommendations were not always taken into consideration by managers. Therefore, employees felt that adjustments to duties, working hours, or ergonomic equipment had to be constantly negotiated and, on occasion, were refused. As the Business in the Community and Public Health England (2019:33) stated:

Management of MSK problems requires a joined-up approach that involves the employee, their healthcare team, and their line manager. The focus must be on helping them [employees] to return or stay at work, working within their abilities.

Furthermore, the barriers and facilitators associated with the implementation of OHS recommendations in the workplace to support the management of a CMSD or the RTW process have not been comprehensively studied. For example, RTW should involve a developmental and dynamic process that includes events prior to and following work resumption (Young et al. 2005); however, this discussion has mainly occurred at a theoretical level (Young et al. 2016).

Research that focused on the prevention of MSDs suggested that financial constraints, reduced resources and a general lack of organisational awareness about MSDs act as barriers to the implementation of ergonomic advice (Rothmore et al. 2017; Koma, Bergh, and Costa-Black 2019; Rothmore,

Aylward, and Karnon 2015). This review supported these findings (Kosny et al. 2018; Esteban et al. 2018; Rothmore et al. 2017; Rothmore, Aylward, and Karnon 2015) and suggested that resources be made available to facilitate employees' access to professional healthcare services which employees perceive as effective support, particularly after long-term sick leave. No other strategies or specific interventions, with the aim of assisting employees to effectively manage their conditions, were identified in the review. It is clear that the provision of professional healthcare services in the workplace and the pathways that can lead to sustainable health support, for example, work-based interventions, wellbeing initiatives or online services, need to be rigorously explored.

This review suggests that employees with CMSDs were ready to change their job role and status due to the impact their condition had on their work. Bevan (2015) reviewed, on behalf of the Work Foundation Charity, the economic and productivity impact of MSDs on the workforce in Europe. The findings suggested that work ability varied amongst those with a CMSD and that many employees did not perform to their full capacity. Also, some employees took early retirement or preferred to become unemployed due to the progression of their condition and often did so without sufficient financial support. Chronic musculoskeletal disorders can impact employees' working lives differently. More research in this area is needed as a better understanding of the reasons employees choose to retire early or feel compelled to leave work at a younger age than anticipated would be useful.

This review has also explained that the relationship between employees and their managers directly impacts employees' abilities to manage their

condition. The review findings suggested that workplace values such as trust, care and communication are important. Smith and Brunner (2017) conducted a small survey research study to explore how people decide to disclose their condition at work. Their findings revealed that the organisational culture (including managers' attitudes) shaped the environment for or against disclosure. For example, the authors found that building trust and educating others about the conditions would positively influence disclosure. Therefore, studies that seek to explore the values that underpin the employee-manager relationship and its impact on health and work would contribute to our understanding of the issues involved from the manager and employee's perspectives. Individualised care, good communication skills and trust in employers and managers are important, so employees with a CMSD can manage their condition effectively and maintain their contribution to the workplace.

3.12 Strengths and limitations of the review

This review included international papers with important insights about the experiences of employees with CMSDs and the resources available that assisted them to remain at work. However, the inclusion of such studies in the review limits transferability to the UK context due to differences in each country's national health and social services. For example, some studies may be conducted in countries where financial resources are limited or where government expenditure supports provision of universal health and social care. A thorough search strategy was conducted, and the review included all relevant available qualitative studies. A transparent and clear approach to the analysis and synthesis processes was used (Thomas and Harden 2008). The literature

search was, however, limited to studies published only in the English language. Besides, the majority of the study participants were females and the employees recruited were in various age groups (not balanced), which did not provide a good age coverage. Lastly, minimum information on employment practices and work settings further limits the transferability of the findings.

In addition, the quality of the included studies was assessed as poor to moderate. Most of the studies did not identify an appropriate methodology or a theoretical framework to guide their study. Also, the authors did not provide adequate information about the participants' recruitment process nor were the data collection methods and analysis explained in any detail. There was no indication of any reflective practice or discussion of the potential influence the researcher may have on the research process. For example, the views and values of those selecting and contacting potential participants may influence the participant recruitment process, the analysis process and the interpretation of the findings. The verbatim findings reported in this review represent a fraction of the original interview and focus group data of the studies reviewed. In addition, the included studies rarely provided sufficient illustrative participant quotes to support the authors' findings. To ensure a rigorous interpretation of the included studies, a member of the supervisory team thoroughly checked my interpretive synthesis process. I, therefore, trust that this review presents a rigorous process of analysis despite the flaws in the studies reviewed.

3.13 Conclusions

This narrative review summarised the qualitative evidence concerning the experiences of employees who manage CMSDs at work and identified

areas of limitations and further research. The review illustrated the importance of the work environment culture, the social components of work, and the employee-manager relationship supporting employees with CMSDs. It was also clear that employees with CMSDs could identify workplace strategies and appropriately request support from HCPs and the OHS that enabled them to manage their conditions effectively.

Research is needed that explores the role of employers, managers, and co-workers in supporting employees with CMSDs at work. Specifically, it will be important to investigate the degree to which, and at what level (e.g. to fulfil legal health and safety requirements only or more generally accessible to all employees) occupational health services are offered by employers. Also, most research has, to date, focused on the strategies offered to employees in the RTW process. This focus needs to be broadened to include other employee groups, particularly those managing CSMDs in the workplace. Research that thoroughly explores the manager's role in providing practical (e.g. work adjustments) and social support and how the manager-employee relationship can be improved will be important. These studies should also consider the impact of that relationship on other parameters, for example, sick leave rates, disclosure and the impact of working with a CMSD without support. Research that explores the co-worker's role and the social components of the work environment could contribute to the development and promotion of supportive work cultures. Finally, the role and delivery of occupational health services and the types of support provided to employees require research. It is also important to explore how evidence, in the context of occupational health, is used to support the strategies offered to employees with CMSDs. In addition, further

research is required to explore the skills and preparation of HCPs that enable them to provide effective work-focused healthcare and to treat employees with CMSDs appropriately.

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Chapter 4: Methodology: Mixed Methods Research

4.1 Introduction

This chapter discusses how a mixed methods research design, grounded in the pragmatist paradigm, was used to address the gaps in research described in the previous chapters. Key methodological concepts that underpin this programme of research are defined and described in relation to the proposed study. The selection of MMR and the sequential exploratory design is explained and justified. A visual overview of the mixed methods design within this programme of research is also included. In addition, the Socio-Ecological Framework (Plano-Clark and Ivankova 2016) is discussed in detail and used to explain how external and internal factors influenced the design of the components of this study. The methods used in each phase of the research are described in Chapters 5 (qualitative) and 7 (quantitative).

The word “paradigm” originates from the Greek word παράδειγμα, which means pattern. It implies a framework of values, ideas and scientific assumptions used to explore problems, identify solutions or both (Daems et al. 2015:1). Kuhn (1970:viii) first defined a paradigm as “*universally recognised scientific achievements that for a time, provide model problems and solutions for a community of practitioners*”. Although there has been considerable debate between scientists, philosophers and researchers about the definition, a paradigm is generally viewed as “*a set of basic beliefs that guides the investigator*” (Guba and Lincoln 1994:105) and influences the way knowledge is understood and interpreted (Mackenzie and Knipe 2006). This belief system - if shared - can enable researchers to agree on critical questions in their area and effective ways to answer these questions. Without choosing a paradigm, there is no basis for subsequent choices regarding the

research methodology or methods. A paradigm has also been defined as a worldview that guides the researcher in the dimensions of ontology, epistemology, axiology and theoretical perspectives (Morgan 2007; Creswell and Plano Clark 2017:35).

This chapter discusses three main paradigms of positivism, constructivism and pragmatism, which relate respectively to quantitative, qualitative, and mixed methods research. This discussion is essential as many articles and books on research design reveal a confusing lack of understanding regarding axiology, ontology, epistemology, and methodology. In order to clarify, for the purposes of this thesis, I chose to discuss the main paradigmatic stances and methodological approaches and then justify my choice of MMR as the methodology to guide this research.

4.2 Overview of the key philosophical principles underpinning this study

‘Ontology’ deals with the idea of existence and the assumptions we hold about the nature of reality (Creswell and Plano Clark 2017:37). Many philosophical problems started as ontological problems; thus, ontology relates to the question "what is" (e.g. What is there? Is there another universe? What is social reality?). It includes problems about specific features and characteristics of entities that are deemed to exist (e.g. What is the relationship between X and Y?), and it is also concerned with what is involved in answering these questions (Hofweber 2017; Crotty 1998:2-12). The ontological position of a researcher varies in different disciplines as the objects or entities that exist in a specific area of interest and their relationships will be conceptualised in different ways (Gruber 1993:1).

The ontological position of the positivist and post-positivist paradigms is referred to as objectivism (Bryman 2016:29). It implies an objective reality where the examination of social phenomena can occur separately from human bias and external factors (Bryman 2016:28; Guba and Lincoln 1994:114). On the other hand, in constructivism, the concept of 'truth' is viewed as subjective, that social phenomena have multiple 'truths', and their meaning is a product of experiences and beliefs (relativism) that can change due to external factors (Bryman 2016:26; Guba and Lincoln 1994:115). In pragmatism, the concept of 'truth' includes physical and social realities and a compromise is sought between subjective and objective positions (Grbich 2013:313). As Morgan (2014a:39) suggests, there is a reality that exists apart from human experience that can only be encountered through human experience.

Since ontological reflection requires the interpretation of what constitutes reality, it is equally important to find out what we know about reality, how we define it, how is it measured and what it means to understand it better (Blaikie 2010). This act of seeking answers to these questions, that is, generating knowledge is known as 'epistemology', and it requires an understanding of research paradigms as it focuses on what constitutes acceptable knowledge in a field of study (Bryman 2016:24; Saunders, Lewis, and Thornhill 2008:112). Epistemology refers to beliefs about knowledge – what constitutes knowledge - and how it is developed using a scientific approach to understand the natural world (Burkholder and Burbank 2020:14). It raises questions about whether the researcher can truly be an objective observer of reality or whether knowledge is really generated through the dynamic interpretation of phenomena (Houghton, Hunter, and Meskell 2012).

In positivism, reality is measured and replicated with standardised procedures in the search for a single truth. In contrast, in constructivism, the researcher cannot be separated from the research process, and the focus is on knowledge of social phenomena and subjective meanings. Pragmatists, on the other hand, value both measurable facts and subjective meanings depending on the nature of the research question (Saunders, Lewis, and Thornhill 2008:109). Knowledge is based both on experience in the world we live in and the integration of multiple sources of knowledge (Johnson and Onwuegbuzie 2004; Morgan 2014a). This discussion demonstrates that ontology and epistemology are intertwined; they emerge together (Easterby-Smith, Thorpe, and Jackson 2012). Thus, in creating and disseminating knowledge, researchers must provide a strong argument for what they believe and what they can justify and prove (Steup 2017). Some authors (Creswell and Plano-Clark 2017; Heron and Reason 1997) argue that researchers demonstrate these skills by reflecting on their values and making judgements about how they influence their approach to designing, implementing, and disseminating research.

The role that values, personal beliefs and preferences play in developing the aims of the research and ensuring ethical research is known as 'axiology' (Creswell et al. 2011:41-42). From an axiological perspective, researchers need to define and provide details for each decision they make in the research process as these will reflect their worldviews, their experience, the choice of the research design and their interpretation of individual and social realities (Creswell et al. 2011:41-42). The chosen research philosophy and data collection techniques reflect axiology (Saunders et al. 2019).

In the positivism paradigm, researchers strive for objectivity in order that the research process and data analysis are not filtered through their understanding. The need to separate the researcher from the research process in order to limit bias and the impact of confounding variables integral to the research context is of primary importance in designing quantitative research (Guba and Lincoln 1994; Della Porta and Michael 2008). Thus, they need to use reliable and valid tools based on manipulative and empirical methods (Bryman 2016:24). In constructivism, researchers play an integral role in the research process and use reflective strategies to identify how their values and beliefs may influence and impact different aspects of a research project (Guba and Lincoln 1994:110-111; Saunders, Lewis, and Thornhill 2008:115). Qualitative researchers do not attempt to distance themselves from the participants, and they focus on a more in-depth interpretation of the relationships between the phenomenon of interest and people (Guest, Namey, and Mitchell 2017:22). Lastly, in pragmatism, the researcher adopts both objective and subjective stances, and their values and beliefs play a vital role in both (Morgan 2014b). The researcher cannot be considered value-free and reflexivity will play an essential role in the study design and implementation (Creamer 2018:11; Fetters 2020:26).

‘Methodology’ refers to the strategy employed by researchers to make transparent their perspectives on the world, explore research problems and identify the methods that can be used to collect and analyse data (Blaikie 2010:36-38). The paradigm informs the choice of methodology, the research problem and the questions identified. Traditionally in the social sciences, guided by the positivist paradigm, researchers followed a deductive approach that focused on testing theories of objective reality by adopting a quantitative research approach which

generated numerical data (Guba and Lincoln 1994:106). In contrast, more recently, researchers have been guided by the constructivist paradigm. They adopted an inductive approach and used qualitative research methodologies to gather observations, understand and interpret the data, and build theoretical frameworks (Creswell and Plano Clark 2011:40). Finally, the pragmatist paradigm forms the foundation of MMR. This approach requires the researcher to incorporate a range of research methods when designing the study in order to address the research question. Morgan (2014a:16-39) explains that beliefs and knowledge are based on personal experiences that are also influenced by shared experiences and the contexts within which these experiences occur. He argues that "*within pragmatism, all experience begins with a problem to be addressed or a question to be answered*" (Morgan 2014a:40) that actively ties together purposes and procedures.

The strengths of both quantitative and qualitative approaches are apparent. Still, to fully understand the rationale for using MMR in this study, it is useful to consider the limitations of each approach with respect to study design and the ability to answer a research question. Quantitative research aims to test theories or hypotheses constructed by the researcher, which can be precisely examined; data are collected and analysed numerically, and the design is characterised by the reliability and validity of measurement (Johnson and Christensen 2020:36). Researchers aim to be neutral and independent in the research process, control bias, and ensure no direct relationship between them and the research subjects. The purpose of the research is to identify potential cause and effect relationships between variables and to verify or reject the predefined theory and hypothesis (Gray 2018:61-63). Researchers recognise the fundamental differences between social institutions and the "world of nature" (Bryman 2016:27), and their goal is to maintain

objectivity and to control variables to establish cause and effect relationships between independent and dependent variables (Bryman 2016:149). Lastly, when an experimental study is rigorous e.g. when the data are valid and reliable, the results of the study can be replicated and generalised. However, quantitative research does not capture individual or group perceptions of real-world experiences or, for example, the experiences of those who have been excluded or have dropped out of social or health studies (Johnson and Christensen 2020:268-296).

In contrast, qualitative research focuses on and, is more responsive to, the experiences of people and how they understand and make meaning of those experiences, and it aims to understand sensitive phenomena and the meaning of human behaviour and attitudes (Savin-Baden and Howell Major 2013). Qualitative research also aims to understand human nature in the real-world context and may result in theory development or explore complex phenomena that little is known about. Qualitative data analysis is driven by emerging themes and what can be drawn from interpreting people's knowledge and narrated experiences (Vaismoradi et al. 2016). Qualitative research findings are grounded in participants' subjective interpretations of their experience of the phenomena of interest and researchers' analytic interpretations of these experiences. Consequently, researchers must employ strategies, such as reflexivity, to ensure the integrity of the study (Bryman 2016:388; Fetters 2020:26). Qualitative researchers do not claim that their findings can be generalised to larger populations; however, it is possible to replicate rigorous qualitative studies and transfer the findings to inform other groups in similar contexts and with similar characteristics (Johnson, Onwuegbuzie, and Turner 2007; Pope and Mays 1995). This process depends on researchers' ability to achieve a high degree of transparency by providing explicit information about the study context, the

methods used, and the researcher's role in the design and implementation of the study. For example, O'Cathain et al. (2007a) assessed issues of quality in MMR. They highlighted that qualitative studies were generally not reported in enough detail, and researchers rarely provided sufficient explanation of how they conducted the study or how they arrived at their conclusions.

Although very different, qualitative and quantitative approaches share some commonalities. Researchers are interested in what their participants do and think, but they investigate these areas in different ways due to their epistemological and ontological positions (Bryman 2016:621-626). Both qualitative and quantitative researchers are concerned with transparently answering questions and using a rigorous approach to the study design to support the exploration of the facts or relationships between variables or participant experiences. However, the research problems that characterise the society in this century are increasingly complex and trying to address them using one research approach is often not enough. The combination of quantitative and qualitative methods can be more effective in tackling these questions. Besides, policy-makers and health providers need different forms of evidence to support changes or the implementation of interventions (Creswell and Plano Clark 2017:7-8).

4.3 Pragmatism as a paradigm for Mixed Methods Research

The basic premise of pragmatism is the unity of knowledge, action, values and experience, where knowledge is linked to action and is produced by experience (Bacon 2012:45-47; Morgan 2014a:26-40). Classical pragmatism was founded by the American philosophers Charles Sanders Peirce (1839-1914), William James (1842-1910) and John Dewey (1859-1952) (Bacon 2012). More recently,

pragmatism, as associated with MMR, has been further developed by Richard Rorty (1931-2007) and others, such as Nicholas Rescher and Hilary Putnam (Bacon 2012). Pragmatism reflects philosophers' efforts to understand, address, and resolve society's problems. Thus, what is practical and significant in the real world was more important to them than the abstract philosophies of the past (Creswell et al. 2003; Tashakkori and Creswell 2007b).

Peirce's conceptualisation of pragmatism was that "*it is not a doctrine of metaphysics⁸ nor an attempt to determine any truth of things. It is merely a method of ascertaining the meaning of hard words of abstract concepts*" (Peirce 1934:121). For Peirce, pragmatism was not about strict practical consequences; instead, it was about the understanding of ideas, scientific theories and indicative signs (Johnson et al. 2017a; Bacon 2012:4-13). Peirce's maxim explained that a concept or belief could be considered valid only if it is familiar to someone who could define it and understand its effects or consequences (Short 2017). What really mattered to him was how human behaviour, beliefs or habit of conduct, (which he defined as the general way that one would act in certain circumstances when stimulated by a motive), could be transformed through the exploration of metaphysical phenomena that are embedded in a more profound meaning (Potter 1973). Peirce's conceptualisation incorporated the idea that pragmatists could make judgements and adjustments to the phenomenon they observed, or change the parameters of an experiment in response to their observations and reasoning at that time, or make decisions throughout the research process (Short 2017). In this way, a pragmatist would not simply follow a plan established at the beginning of the research process

⁸ Metaphysics is concerned with the fundamental nature of reality that sits outside objective experience (Merriam-Webster n.d.)

until its conclusion but deliberately change it at different stages to enhance the outcome.

The relevance of Peirce's concept of pragmatism lies in its theory of logic, that is, the ways of developing habits of thinking and the ability to reason them using an abductive as opposed to an inductive or deductive approach to research (Campbell 2011). To be more explicit, deductive reasoning aims at testing an existing hypothesis or theory where the argument moves from general principles to instances (Williamson, Burstein, and McKemmish 2002). On the other hand, inductive reasoning begins with "the study of a range of individual cases and extrapolation from them to form a conceptual category" (Charmaz 2006:188). Therefore, expressed simply, deduction reflects the quantitative approach to research and induction the qualitative research tradition (Kennedy 2018:51)

Abduction focuses on explaining a surprising event, and according to Peirce, it enables scientists and philosophers to progress in research by creating and adopting new ideas throughout the process (Kapitan 1997). Yu (1994:19) explained that for Peirce:

A reasoner should apply abduction, deduction and induction altogether in order to achieve a comprehensive inquiry...At the stage of abduction the goal is to explore data, find out a pattern, and suggest a plausible hypothesis with the use of proper categories; deduction is to build a logical and testable hypothesis based upon other plausible premises; and induction is the approximation towards the truth in order to fix our beliefs for further inquiry.

In the late 20th century, Pragmatists adopted an interpretation of abductive inquiry, based on Peirce's work, to reason their thoughts, opinions, and judgments (Johnson and Onwuegbuzie 2004; Teddlie and Tashakkori 2010). Abduction is generally defined as "an approach to theory development involving the collection of data to

explore a phenomenon, identify themes and explain patterns to generate a new, or modify an existing, theory which is subsequently tested" (Saunders and Lewis 2018:113).

William James (1842-1910) further developed Peirce's conceptualisation of pragmatism and established his newly emerging philosophical theory in: "Pragmatism: A New Name for Some Old Ways of Thinking" (James 1907). He believed that metaphysics and science could be more closely aligned and suggested that the real world of experience and action could be discussed and explored by combining the knowledge and processes of both natural and social sciences (Bacon 2012:12-43). Consequently, James presented as a phenomenological empiricist, and his approach to enquiry and MMR was qualitatively driven (Johnson et al. 2017b). Moreover, James' discussion of pragmatism was linked with theories of religion and morality, and, as a result, his conceptualisation of pragmatism proved less relevant to subsequent interpretations of pragmatism (Swedberg 2015).

John Dewey's (1859-1952) approach proved more relevant, particularly in the field of education, as it focused on human experience and action in the real world. He advocated that philosophy needed to move away from abstract concerns and be understood in terms of the "real" problems it addressed (Morgan 2014a). His development of a theory of inquiry was based on people's everyday life experiences, and he took into account the ideas and reasoning that were used to understand facts, create knowledge, evaluate or reach conclusions (Elkjaer 2000; Bacon 2012:44-63). In his account of pragmatism, an understanding of experiences is developed through a process of interpretation; "*beliefs must be interpreted to generate action, and actions must be interpreted to generate beliefs*" (Morgan

2014b:1046). In relation to MMR, Dewey's approach bridged dualism by focusing on keeping what is useful in each type of research (Johnson et al. 2017b).

Researchers, who are guided by Dewey's pragmatic approach, seek to improve people's lives and 'solve' research and social problems by providing a comprehensive answer that can be put to practical use (Johnson et al. 2017b). After Dewey's contribution pragmatism, as a philosophical approach to enquiry, seemed to fall out of favour for a number of years (Boyer 2010) until Richard Rorty (1931-2007), inspired by Dewey and James, developed his "new pragmatism" (Johnson et al. 2017b). His approach proved different in two ways: firstly, he replaced the focus of research on experiences by analysing discussions and conversations (Brodsky 1982). Secondly, he sought to free inquiry from traditional scientific methods and revealed a strong anti-epistemological and anti-metaphysical stance (Brodsky 1982). A pragmatist, as Rorty sees it, is someone who shares the believes that:

There is no whole-sale, epistemological way to direct, or criticise, or underwrite, the course of inquiry...there is no epistemological difference between facts and values, nor any methodological difference between morality and science...and there are no constraints on inquiry save conversational ones. (Rorty 1982:160-175).

Rorty argued that pragmatism, as a movement, comprises several "ambiguities". In his view, it was not clear "why natural science [a branch of science that studies the physical world, e.g. physics, chemistry, geology, and biology], rather than the arts, or politics, or religion, should take over the area left "vacant" by philosophy (Rorty 1979:71 cited in Brodsky 1982:378). Also, in his view, classical pragmatists focused too much on experiences, whereas conversations could better enhance the philosophical argument (Johnson et al. 2017a). Rorty was influenced by Dewey's views on culture and social justice, but at the same time, he embraced language as the vehicle by which reality was shaped (Koopman 2011; Wellmer

2008). Language is a communication tool that can be used to convey information to others and influences the way people see the world, think and behave (Whorf et al. 2012). Rorty advocated that dialogue or debate would better justify ways of addressing research problems because, in his view, language was not just a tool by which knowledge could be acquired but a philosophical approach (Johnson et al. 2017a). Vocabulary can be used to describe the structure of the world in terms of what use language might serve or enable us to do things we could not do before (Allen 2003). Linguistic pragmatists believed that "one cannot pretend to justify knowledge or truth claims by reference to some allegedly non- or pre-linguistic "experience" that supposedly provides the ultimate constraints on what counts as knowledge" (Johnson 2014:16). Rorty's articulation of linguistic philosophy (linguistic turn) and his focus on the overriding importance of conversations in generating knowledge was quite radical. Many of his critics considered that it was impossible to disentangle language and experience and this debate continues amongst contemporary pragmatists (Johnson et al. 2017a; Misak 2014).

The definition of pragmatism most commonly used in relation to MMR reflects Dewey's conceptualisation and is an established way of thinking about this approach to inquiry. Dewey's pragmatic decision-making process is dynamically applied to enable a more flexible approach to research that facilitates a rigorous and ongoing review of both the research question and design. As Dewey (2008:14) suggested: *"old questions are disappearing, evaporating, while new questions corresponding to the changed attitude of endeavour and preference take place"*. Pragmatism has been endorsed as a philosophy that bridges 'the gap' between philosophers and theorists (Johnson and Onwuegbuzie 2004). However, while current approaches to pragmatism share common origins, proponents of pragmatism currently fall into

three groups: Pragmatism of the left (suggesting antirealism and pluralism), the right (implying realism and weak pluralism) and middle philosophy (inclusive, pluralistic, and complementary) (Johnson and Onwuegbuzie 2004; Johnson, Onwuegbuzie, and Turner 2007; Johnson et al. 2017a). These groupings offer greater flexibility compared to other philosophies (Johnson et al. 2017a; Bryman 2007).

After the 1990s, some researchers began to adopt the paradigm of pragmatism to support the emerging MMR methodology and to refute European critics who, at the time, suggested that pragmatism was too 'materialistic' and too 'American' in its efforts to address 'real' world problems (Rescher 2016). In this developmental period, researchers defined and described mixed methods research using a common terminology and notation system and began to identify specific MMR designs (Tashakkori and Creswell 2007a; Johnson and Onwuegbuzie 2004; Teddlie and Tashakkori 2010; Morse 2010). The notation system that is used in mixed methods research can be found in Appendix 4.1.

More recently, MMR has been recognised as a distinct research methodology and there has been an increase in MMR studies reported in peer-reviewed journals. The Journal of Mixed Methods Research and the International Journal of Multiple Research Approaches were established in 2007 and a diversity of resources are now available to assist researchers in choosing an appropriate MMR design and developing studies in a coherent way (Plano Clark and Ivankova 2016; Creswell and Plano Clark 2017:33). The National Institute of Health and the Office of Behavioural and Social Science report (1999:9) supported the wider use of MMR, saying that: *"combining qualitative and quantitative methods has gained broad appeal and relevance in public health research"*.

Currently, MMR has drawn the attention of a variety of disciplines (e.g. sociology, psychology, medicine). An increasing number of papers have been published that critique the techniques used, reflect on the strengths and weaknesses of the approach and challenge the value of MMR (Green 2014; Creswell and Garrett 2008; Shaw, Connelly, and Zecevic 2010; Kelle and Buchholtz 2015; Creswell and Plano-Clark 2017). The ability of MMR to address complex 'real life' issues and problems has also been appraised (Creswell and Plano Clark 2011:12-13). Morgan (2014b:105) stated that: *"The larger point is that pragmatism, as a broad paradigm for social research, can account for the accomplishments of the previous paradigms without the need for metaphysical assumptions. In this case, pragmatism can stand outside the previous assumptions and still provide at least as strong a bond to social justice goals"*. In a practical sense, pragmatists are more concerned with the reality that originates in human perception and understanding and, therefore, a variety of collection methods can effectively be employed that are usually associated with other research methodologies (Johnson and Onwuegbuzie 2004).

Greene (2009:56) argues that inquiry is basically atheoretical as it is *"not really about epistemology, defensible methodology, or warranted claims to know, even though framed as such. Instead, it can represent political principles and tactics to attain them"*. However, other authors feel strongly that researchers should not adopt MMR merely as a 'what works' approach or as a means to secure funding for personal research interests or promote publication (Denzin 2010; Greene 2007; Bryman 2006). As identified in a group discussion involving John Creswell at the 4th International Mixed Methods Research Conference (2008) in Cambridge, U.K, part of the problem has been the title mixed 'methods' research. The group was concerned that the title was misleading as it focused attention away from methodological issues

and focused primarily on the generation of data and data collection methods. They felt that it reinforced the notion that MMR is fundamentally atheoretical and lacking in a philosophical foundation. The importance of grounding MMR theoretically was discussed. Since then pragmatism, as the philosophical foundation of MMR, has been more consistently discussed and promoted and is consequently better understood (Carpenter, personal communication April 2017).

4.4 Rationale for MMR Methodology

After considering my ontological, epistemological and axiological perspectives, I concluded that pragmatism of the middle philosophy (Johnson and Onwuegbuzie 2004) and a MMR approach best reflected my worldview as a researcher and was the most appropriate choice by which to address the complex study research aim and objectives. Mixed methods research combines the strengths of qualitative and quantitative methods and demonstrates a clear link between the selected methods and the research question (Morgan 2014a; Johnson and Onwuegbuzie 2004). It also enhances the clarity of the findings of different data sets (Greene, Caracelli, and Graham 1989; Creswell and Plano-Clark 2011; Bryman 2007) and can inform both theory and practice (Johnson and Onwuegbuzie 2004).

Mixed methods research is viewed as a way of addressing complex health care issues by using a combination of research approaches (Loft et al. 2018; Fetters, Curry, and Creswell 2013; Aitken et al. 2017; Kavanagh et al. 2012). Examples of such issues are poor adherence to rehabilitation programmes, multidisciplinary approaches to health care and identification of the most effective treatment approaches (Creswell 2009; Tariq and Woodman 2013). The complex healthcare issues and the diversity of health care recipients have contributed to the

increasing use of MMR designs in health care (Strudsholm et al. 2016; Ivankova and Kawamura 2010).

Different authors from a variety of disciplines (e.g. health, psychology, sociology) have defined and described MMR in recent years (Teddle and Tashakkori 2010; Greene 2007; Tashakkori and Creswell 2007b). For instance, Tashakkori and Teddle (1998a) first proposed the term 'mixed methods'. Their intention was to emphasise the concept of mixing different methodological approaches but the term failed to adequately differentiate between 'methodology' and 'methods' and, as discussed above, contributed to the perceived atheoretical nature of MMR. Johnson et al. (2007) reviewed 19 different definitions of MMR and argued that these definitions were not consistently interpreted and understood. Specifically, definitions varied concerning whether the combination should include both qualitative and quantitative approaches or focus primarily on one of these approaches, how data collection methods might be used; when the integration should happen, and how the use of MMR was best justified.

Creswell and Plano Clark's (2011:5) comprehensive definition was used to guide this study and reflected the unique characteristics of this approach:

Mixed methods research is a design with philosophical assumptions as well as methods of inquiry. As a methodology, it involves philosophical assumptions that guide the direction of the data collection and analysis and the mixture of qualitative and quantitative data in a single study or series of studies.

Creswell and Plano Clark (2011:5) also suggested that: "*This approach to research in the social, behavioural, and health sciences...provides a better understanding of the research problem than either form of data alone*".

4.5 Characteristics of a Mixed Methods Research Design

The core characteristics and key components of MMR that unite the MMR community have been articulated in detail (Creswell 2015; Creamer 2018; Johnson and Onwuegbuzie 2004; Creswell and Plano-Clark 2017) and much of this content is based on the work of Creswell and Plano Clark (2017) and Plano-Clark and Ivankova (2016). These authors have contributed a great deal to the understanding of MMR and increased rigorous application of MMR in the health, social and education fields of research. There is broad agreement on the principles and types of MMR design (Greene, Caracelli, and Graham 1989; Patton 2015; Creswell 2015). Six types of MMR designs have been identified which are categorised in two groups: basic and advanced designs.

The basic MMR design group includes convergent, explanatory, and exploratory designs, whereas the advanced designs are described as intervention, social justice, and multistage evaluation design (Creswell 2015:34-40). In the convergent design, qualitative and quantitative data are collected at the same time, independently analysed, and then merged to combine or compare the results. This design provides a comprehensive understanding of the topic of interest or provides a platform to explain any differences identified. The explanatory sequential design involves the collection and the analysis of quantitative data to determine what results need to be further explained using a qualitative research approach which may involve a purposive sampling approach to identify participants. Lastly, in the exploratory sequential design, the topic of interest is explored through qualitative data collection and analysis. It mainly enables information to be collected and used to develop a quantitative component that will facilitate an in-depth exploration of the phenomenon and measurement of its dimensions. Therefore, an exploratory

sequential MMR design was considered the most appropriate for this study. The procedural processes of the basic MMR are depicted in Appendix 4.2.

Several design approaches (known as the typologies of MMR) have been developed to promote effective integration and establish a common language for MMR (Teddle and Tashakkori 2010). It encourages researchers to use a classification system that can guide them in selecting an appropriate method and to provide clarity to the study objectives (Creswell and Plano Clark 2011:55; Schoonenboom and Johnson 2017). For example, mixed methods core designs can be categorised as fixed or emergent (Creswell and Plano-Clark 2017). In fixed mixed methods the methods used are predetermined at the start of the research whereas at the emergent designs the selection of methods depends on the issues that develop throughout the project (Creswell and Plano-Clark 2017). In this MMR I decided on a fixed design where the quantitative and qualitative methods were pre-planned at the start of the research process to address the objectives of the study.

An important characteristic of MMR refers to the use of a range of different rigorous data collection and analytic methods in each research component (Creswell 2015:2). Teddle and Tashakkori (2010:302) suggest that the “*design quality refers to the degree to which the investigator has selected and implemented the most appropriate procedures for answering the research questions*”. The authors also explain the importance of clearly reporting each design to evaluate the generated inferences' quality. Appropriate guidelines have been established for the design of each component within an MMR study, and evaluative criteria need to be applied to assess the quality of the components of an MMR study (Schoonenboom and Johnson 2017). The essential elements of rigorous quantitative and qualitative methods include the sampling approach and sample size, participant recruitment,

data collection methods and data analysis approach, type of instruments used and transparent account of how the data were generated. Plano-Clark and Ivankova (2016:166-169) explain that the quality of each strand (component) of the study can affect the quality of the meta-inferences of the entire MMR study.

4.6 Integration as an essential component of MMR

One of the essential principles of MMR is the combination or integration of data obtained from the different research components. Integration can occur at different points, for example, at the raw data stage or during the analysis phase depending on the study design and these integration points have been described as merging, connecting, building, and embedding, (Guetterman, Creswell, and Fetters 2015; Creswell and Plano-Clark 2017). Integration is the unique attribute of MMR as researchers do not conceptualise, conduct, and report the components separately but intentionally combine as a whole study. Creamer (2018:82) suggested that integration is a dynamic and interactive process within the specific mixed method designs. This process is “an approach where there is the intention to mix or integrate the qualitative and quantitative strands of study throughout each of the stages or phases of the research process (Creamer 2018:11)”.

In this study, the integration first occurred in the development of a complex research aim and objectives with the purpose of guiding the study design and implementation which required a combination of qualitative and quantitative approaches to effectively address them. The overall aim of this study was to explore older employees' experiences of CMSDs in relation to their employment, their perspectives on managing these conditions in the workplace, and the strategies used to facilitate and maintain their roles and responsibilities and to identify what

services are offered to them in the workplace. Secondly, it occurred through the sampling approach as participants were recruited for the two study components from the same sampling frame. Another important integration occurred in the development of the survey questionnaire as the data obtained in semi-structured interviews with participants in the qualitative component were used to inform the design of the questions (items) in the survey research component. Finally, integration also occurred at the interpretative level that facilitated the synthesis of the qualitative and survey findings. These points of integration are thoroughly explained in subsequent chapters.

4.7 Rationale for a Mixed Methods Research design

A thorough justification for the choice of MMR is an essential methodological consideration. The use of both qualitative and quantitative methods in this study maximised the strengths and minimised the limitations of the qualitative and survey research approaches. This reasoning has also been referred to in the literature as 'offsetting strengths and weaknesses' (Johnson and Onwuegbuzie 2004; Plano Clark and Ivankova 2016:84). The results of the qualitative semi-structured interviews were used to inform the survey phase in two ways; the qualitative findings guided not only the design of the questionnaire (developmental rational) but also the interpretation of the findings. As Bazeley (2011:73) explained "*this might serve confirmatory purpose, in a form of sequential triangulation*". Complementarity was achieved by comparing and contrasting the findings of both methods to confirm or contradict, elaborate descriptions, and create strong inferences grounded in the actual experiences of participants. Lastly, the use of MMR addressed the complex aim of this study using different perspectives that allowed a more complete and comprehensive interpretation.

4.8 Use of the Socio-Ecological Framework

The Socio-Ecological Framework (Plano-Clark and Ivankova 2016) highlights the complexity of the research endeavour, that is, the external influences (institutional structures, disciplinary conventions and societal priorities) and the components of MMR design including ethics, the research team and the imperative to publish that need to be considered in relation to the contexts (personal, interpersonal and social) within which an MMR study is conducted. This study was designed using two sequential (qualitative and quantitative) components and the Socio-Ecological Framework was used as a blueprint to guide and present the study design and implementation (see Figure 4.1). The centre of the framework depicts the design chosen for this study and the 5 interlinked circles demonstrate my understanding of the characteristics of MMR. The use of lowercase characters of the words 'Qual and Quant' indicate that the two components share equal importance in addressing the study purpose (Plano-Clark and Ivankova 2016).

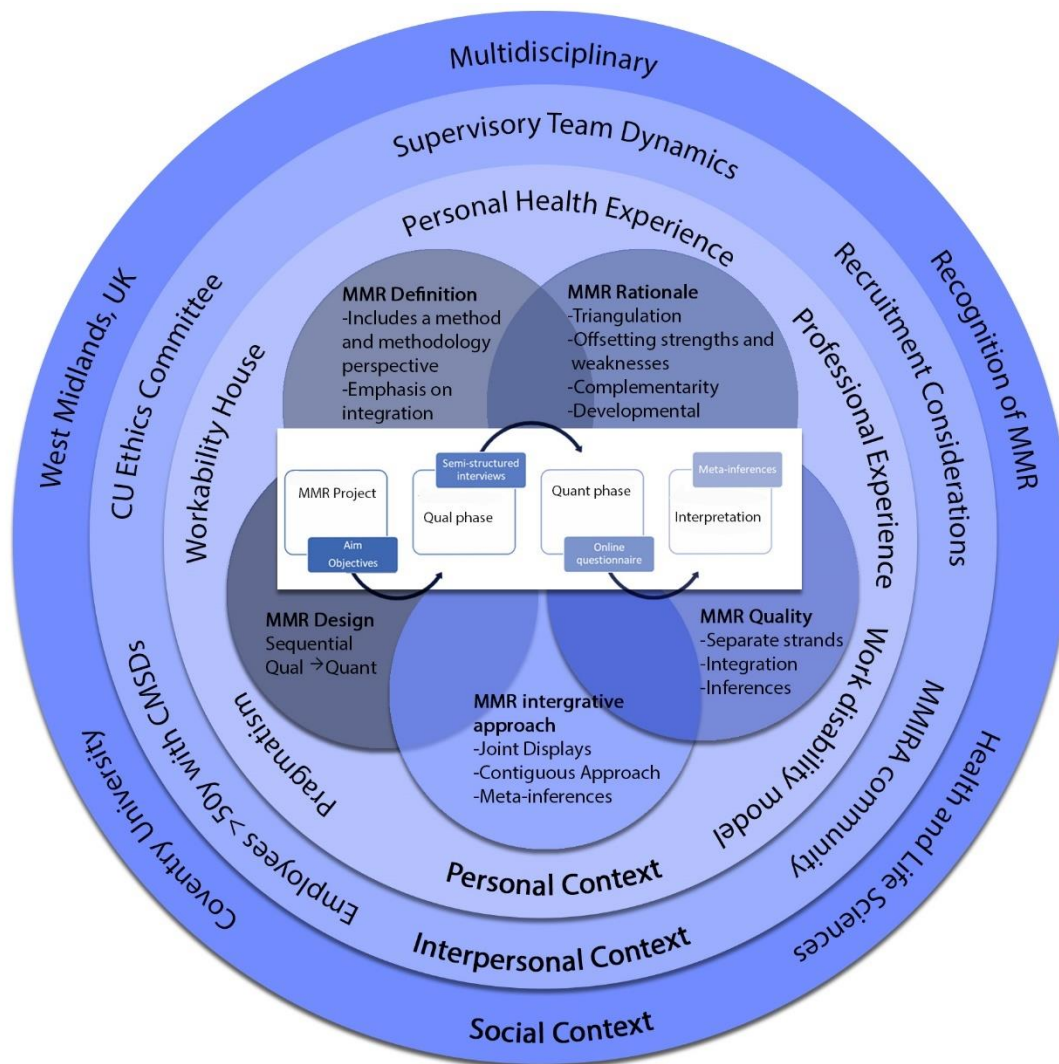
The qualitative component of the study was implemented first. Semi-structured interviews conducted in West Midlands UK enabled me to gain greater understanding of the experiences of older employees managing a CMSD at work and the strategies they used to facilitate and maintain their employment roles and responsibilities. This qualitative phase was followed by a quantitative (survey) component and the qualitative findings were used extensively to inform the development of a questionnaire. The questionnaire was administered in different work settings and the data were statistically analysed. The findings of both components were integrated to address the research aim and objectives and ensure that rigorous and valid meta-inferences were generated and reported. The research process at different stages of the study design is depicted in the Socio-Ecological

Framework in the form of five overlapping inner circles representing the different contexts that influenced the study (Plano-Clark and Ivankova 2016:20-21). For example, integration is an integral characteristic of MMR and is depicted in the domain “MMR integrative approach” (Figure 4.1).

The personal context can directly shape MMR practices and may consist of philosophical assumptions, theoretical models, and previous knowledge. My personal interest in this topic is based on my professional experience as a physiotherapist in musculoskeletal and occupational physiotherapy health practice (see Chapter 1). I have also been a committee member of the Association of Chartered Physiotherapists in Occupational Health and Ergonomics (ACPOHE) which is a professional network of the Chartered Society of Physiotherapy. The framework also helped me to highlight how my knowledge and experience in these practice areas and my position as a university lecturer in physiotherapy and a research officer in the ACPOHE association influenced my role as a researcher.

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Figure 4.1: The Socio-Ecological Framework (Plano Clark and Ivankova, 2016) as adapted for this study



I have discussed how my philosophical assumptions reflected pragmatism and my previous research experience influenced my interest in the research topic and the subsequent choice of MMR. I began the research process with some experience, gained at the university, in both quantitative and qualitative approaches and a personal health experience of managing a CMSD enabled me to better relate to the participants' accounts of their experiences. Lastly, the personal context influenced the choice of two theoretical models, described in Chapter 1, that were

used to guide this research: the Arena of Work Disability Model (Loisel et al. 2005, 2001) and the Work Ability Model (Ilmarinen and Ilmarinen 2015).

The interpersonal context considers how 'outer factors' e.g. research ethics and researchers' relationships with study participants, influenced the study and refers to relationships and other interactions that influence the process of research (Plano-Clark and Ivankova 2016:219-243). I identified several contextual influences outlined in this second circle. The supervisory team consisted of researchers from different disciplines and methodological traditions and they represented skills and expertise in MMR, quantitative research and qualitative research, and also a professional knowledge of occupation health and ergonomics. The supervisory team mentored and supported me on a personal and professional level throughout this process. I was guided in MMR and research techniques while at the same time I was given the space and the opportunity to make my own choices. The team also supported my academic and organisation skills, such as academic writing, planning and data management by giving me feedback on written work or answering questions via emails. In addition, constructive feedback was received during each annual Progress Review Panel (PRP) at Coventry University where areas of good performance and of improvement were highlighted by academic staff not directly involved with the study.

I also attended several workshops and courses to enhance my understanding of MMR, for example, I completed an accredited two-month online course 'Introduction to Mixed Methods Research' offered by the Harvard Clinical and Translational Science Centre. The course was developed by John Creswell and instructed by Rebekka Lee and Gina Kruse to assist participants to learn how qualitative and quantitative data could be integrated to answer complex research

questions. In addition, I participated in a series of online webinars provided by the University of Alberta and presented by John Creswell, Donna Mertens and Pat Bazeley. My general understanding of MMR was further developed when I attended the 3rd Global Mixed Methods International Research Association Conference where I had the opportunity to meet and attend workshops offered by well-known Mixed Methods researchers, such as Elizabeth Creamer, Burke Johnson, Vicky Plano Clark, and Antony Onwuegbuzie. These professional experiences enabled me to make the informed decisions I needed to in order to navigate and plan this study.

Ethics approval for both qualitative and quantitative research components in this MMR design were sought from Coventry University Research Ethics Committee. Three separate applications that were interlinked and cross-referenced were sent for approval to the Committee: a proposal for the systematic review of the quantitative research literature that was conducted at the beginning of the project, a proposal for the qualitative phase and finally an application for the survey phase. This decision was taken to allow committee members to become familiar with a mixed-methods project and its implementation procedures. Ethical approval was granted separately for each phase by the committee and all certifications can be found in Appendix 4.3

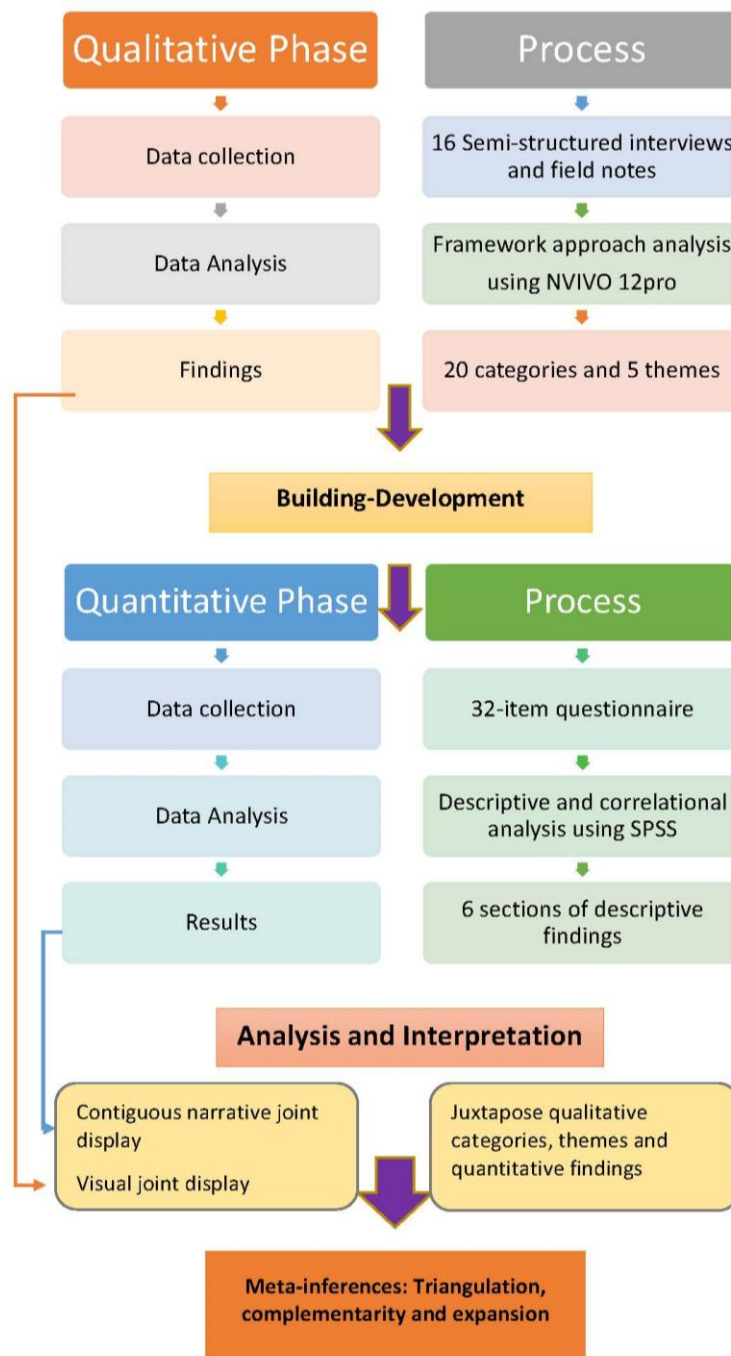
Finally, the outermost circle – the social context - included the larger organisational and governmental policies, structures, and values, such as, the university research community and discipline of physiotherapy that also influenced the study design and implementation. This study was supported by Coventry University, where, within the Faculty of Health and Science, MMR is an accepted research approach. As I am a member of staff the faculty paid the annual PhD fees, the registration fees for conferences, and I was released from teaching responsibilities and took leave of absence time for write-up of the final thesis. I was

also able to attend a number of MMR workshops and seminars (face-to-face and online learning) and presented aspects of the research at conferences. These learning experiences were of great value and influenced the decisions I made in designing this study. Lastly, I accessed published disciplinary-focused discussions, such as, Best Practices for Mixed Methods Research commissioned by the National Institutes of Health (Dowding 2013) which focused on how to conduct and disseminate MMR in the health sciences.

4.9 Using an exploratory sequential MMR design

An exploratory sequential mixed methods design (Figure 4.2) was selected as the most appropriate choice to address the aim and objectives of this study (Creswell and Plano-Clark 2011:81-90). In the first qualitative phase, semi-structured interviews were used to collect data and to gain an in-depth understanding of older employees' experiences. The information collected was used in the second phase to develop a questionnaire that was distributed to a larger population. Finally, the third phase of the study included the integration of the findings and the explanation of how the qualitative phase 'speaks' to the quantitative phase. The design also enabled me to identify when there was convergence or divergence between the qualitative and quantitative findings (Creamer 2018), and it was ideal for the exploration of complex phenomena when there is little known about them (Creswell and Plano Clark 2011:86).

Figure 4.2: Overview of the exploratory sequential design



There were three main reasons for choosing this specific MMR design. Firstly, the choice of an exploratory design was guided by the research aim and the objectives of this study. I asked myself: “What is the best way to resolve this research problem? What type of data collection activities will this likely involve?” In

this exploratory design, qualitative data is first collected because the inductive nature of qualitative research lends itself to exploration of a complex topic. Through the qualitative component I gained a broad and detailed understanding of the participants' experiences. Themes are also analysed and used to drive the development of the quantitative tool in the second phase, to further explore the research problem (Creswell and Plano Clark 2017:86). Secondly, within a sequential design, the use of one method will enhance the effectiveness of the other. Morgan (2014a) has defined this as 'sequential contributions' the aim of which is to learn from one method and use these data to inform another method. Thus, the results from the semi-structured interviews in this study served as an input to the survey research component that followed.

The advantage of using semi-structured interviews to collect data in the first qualitative phase is that they provided a rich description of the employees' experiences. These descriptions were used in the survey research to develop a questionnaire in order to investigate further the phenomenon of interest. For example, Fisher et al.'s (2018) study used focus groups, interviews and a questionnaire to explore pharmacist independent prescribers' (PIPs') perceptions about their prescribing role and other factors associated with prescribing activity in hospitals in Scotland. In the first phase of this exploratory sequential design the authors collected and analysed qualitative data from managers (N=3) using semi-structured interviews and PIPs using a focus group (N=25). In the second phase the authors used these findings to create and administer an online questionnaire to hospital PIPs (N=170). The integrated findings highlighted that organisational culture, manager's activity and other factors may influence hospital prescribing service. The

combined findings reinforced both the role of PIPs and the perceived positive impact of supportive pharmacy leadership within the organisation.

In MMR key issues like integration, timing and priority also need to be considered (Guetterman, Creswell, and Feters 2015; van Griensven, Moore, and Hall 2014; Creswell and Plano-Clark 2011). The exploratory sequential design was essential as the outcomes of this study could only be achieved by blending the qualitative and the quantitative phases. It was also clear that the qualitative phase needed to be conducted first as it produced an in-depth understanding of the participants' experiences which contributed significantly to the design of the questionnaire (Teddlie and Tashakkori 2010). Lastly, the stated aim and objectives of the study could be more fully addressed by giving equal priority to both components of this MMR which is a characteristic of the exploratory sequential design.

Subsequent chapters will discuss the qualitative component implementation in terms of methods (e.g. participant recruitment, data collection etc) used and the qualitative findings (Chapter 5, 6), and implementation of the survey research component in terms of methods (e.g. questionnaire development and administration) and the survey research findings (Chapters 7 and 8).

Chapter 5: Research Methods - Qualitative Phase

5.1 Introduction

This chapter focuses on the data collection methods chosen for the qualitative phase of this exploratory sequential MMR, beginning with the sampling approach used and the participant recruitment process. In addition, the methods of analysis, the process of coding the interviews and interpreting the findings are also explained. The role of the researcher is integral to qualitative research and this will also be discussed. The strengths and weaknesses of this phase and the strategies used to ensure the rigour of the study are discussed at the end of this chapter.

5.2 Participant selection

Participants in this study were older employees with at least one chronic musculoskeletal disorder. These employees were identified through private and public companies in the West Midlands, UK. The inclusion criteria were employees who were working full-time in either private or public enterprises, were at least 50 years of age and reported at least one CMSD (12 weeks or more) in any area of the body. Exclusion criteria for the study included individuals who were self-employed, and employees who had applied for early retirement, and who had a specific pathological condition (e.g. tumours, infections) or an acute (as opposed to chronic) musculoskeletal disorder (see Table 5.1).

5.3 Sampling Strategy

Collins et al. (2007) developed a two-dimensional sampling model for formulating sampling decisions in MMR. In this model, quantitative and qualitative methods that are used, either at the same time or sequentially, are guided by the sampling strategy of each phase (Collins, Onwuegbuzie, and Jiao 2006).

Table 5.1: Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
Working-age male and female adults (50> years)	Specific pathological conditions (e.g. tumours, infections, fractures). Hypertension or cardiovascular diseases, symptomatic disc prolapses or severe cervical spine disorders, postoperative conditions in the neck and shoulder region, history of severe trauma, and pregnancy.
All types of jobs	Applied for an early retirement
Reported chronic conditions (12 weeks or more) involving any area of the body	Acute musculoskeletal conditions
Public or private sector	Self-employed or part-time
Fluent in English	Not fluent in English

In this exploratory sequential design, a sequential sample typology was chosen; the sample was different, but it was drawn from the same population. This study aimed to gather in-depth information from employees who had a CMSD over the age of 50 in various workplaces. As the sample needs to represent the defined population (Tashakkori and Teddlie 1998b; DePoy and Gitlin 2016a), a purposive sampling approach was used in this study (Patton 1999). Purposive sampling is a strategic approach to recruiting only participants who have the experiences and knowledge relevant to the research aim (Creswell and Plano-Clark 2017). This non-probability form of sampling allowed a sub-group from the target population who had the

experience of managing a CMSD and were willing to share their experiences concerning their employment to be selected (Roberts and Priest 2010).

There are no specific rules governing the sample size in qualitative research; researchers deliberately seek participants in particular settings for the important information and insights they can provide that cannot be acquired as effectively through other means (Carpenter and Suto 2008:79-80). Thus, participant recruitment can continue until rich data and 'data saturation' has been achieved (Bryman 2016:417-418). Data saturation, as a concept, has been generally accepted in qualitative research as a way of determining how much data e.g. how many interviews or focus groups, should be conducted. It is said to occur when little or no additional information related to the study topic is generated from the data collection process (Carpenter and Suto 2008; Liamputtong 2013). As Czarniawska (2014:145) said: "*when your field material (interviews, observations, documents collected) becomes repetitive, it is time to stop*".

5.4 Participant recruitment

Participant recruitment was a challenging process in this phase. The first step was to identify representatives in a diverse number of large, medium-sized and/or small companies in the West Midlands. Permission to involve employees in data collection at these sites was sought from multiple individuals (known as 'gatekeepers') employed by these organisations to oversee the sites and who worked in the Department of Human Resources (HR) or had a managerial role. I first contacted these individuals by sending an e-mail. In the email I introduced myself and asked to be signposted to the most appropriate person with whom I could discuss the study in more detail and provide information about what involvement in

the study would entail for both the company and employee. A number of these individuals did contact me to discuss the study, and, at this time, I was able to emphasise the importance of the employees' involvement and reassure them about confidentiality and data protection processes. Once they had expressed an interest in their company being involved, I sent them an e-mail to be forwarded to the employees. A participant information leaflet and an introductory letter were attached to the e-mail (See Appendix 5.1 and 5.2). Finally, I suggested a phone call or a visit to their site to further discuss the study and answer questions or provide clarification. All documents provided to the 'gatekeepers' and used to promote the study were approved in advance by the Coventry University Research Ethics Committee at Coventry University (P68926).

Unfortunately, very few company representatives responded positively at this stage of the recruitment process as they seemed concerned about what the employees would reveal in the study. As it could potentially reflect badly on the company, they declined to be involved. In addition, two company representatives wished to check the interview questions and be present in the interview. Only one manager responded positively and distributed the study information to the employees. As very few responses emerged from this initial approach to recruitment, I decided to advertise the study on social media and other public online spaces.

After gaining approval of the revised ethics application form, I created two very short videos in which I briefly explained the study and invited employees and employers to contact me, if interested, for more information. These videos were posted on the online 'Coventry University Physiotherapy blog' entitled *Invitation to Research*, and I shared the link on the social media pages (Facebook, Twitter, and LinkedIn) of the previously identified companies. In addition, the video was

advertised in the local newspaper with a QR-Code (Figure 5.1). Over 3 weeks, thirty-eight people from different work sites volunteered to participate in the study. Sixteen interviews (excluding pilot interviews) were conducted between May 2018 and July 2018, at which point I considered that data saturation had been achieved. A follow-up e-mail was sent to those who contacted me, thanking them for their interest in the study and explaining that sufficient interviews had been conducted. They were also made aware that although they were not needed for the interviews, there would be an opportunity to participate in the second phase of this study if they were interested. Participants were assigned pseudonyms for the study to ensure confidentiality and all the workplace names, cities and gender pronouns were removed when data quotations were used in subsequent reports and publications.

Figure 5.1: QR-Code



5.5 Ethical approval

Phase 1 of this study was reviewed and approved by Coventry University Research Ethics Committee (see Appendix 4.3). The research design followed the codes of ethics and conduct of Coventry University and consent was gained from the participants who took part in the study. All participants were made aware that they could withdraw at any time during the data collection process. All sensitive data were anonymised using pseudonyms and original audio recordings were destroyed at the end of the qualitative analysis phase. Participants also received an e-mail with an information leaflet that outlined the aim of the research, their right to withdraw and the contact details for the primary researcher and the Director of Studies (DoS). The

leaflet provided comprehensive information about the issues of confidentiality, anonymity and data protection. In case the involvement in the interviews caused unanticipated emotional distress, each participant was given the contact details of a free-of-charge psychological support service.

5.6 Data Collection Method: In-depth interviews

In-depth (or semi-structured) qualitative interviews are a commonly used method of data collection for qualitative studies across a range of disciplines (Edwards and Holland 2013; Carpenter and Suto 2008; Roller and Lavrakas 2015). They are used to provide a greater understanding of the views, attitudes, or behaviours of individuals who have knowledge and experience of the phenomenon being studied (Roller and Lavrakas 2015). Qualitative interviewing and other types of interviewing are rarely defined in the same way by different disciplines, e.g. clinical health settings, journalism or psychology and "*there are not necessarily hard-and-fast distinctions between these interview forms*" (Brinkmann and Kvale 2005:4). In '*clinical interviewing*', healthcare professionals have a limited amount of time in which to gather information about patients' medical history and condition and, based on the data they gather and their own knowledge and clinical reasoning, their main aim to diagnose the problem and create a treatment plan (Carpenter and Suto 2008:82; Roller and Lavrakas 2015). In contrast, qualitative researchers employ interviewing strategies to gather information in the form of a narrative from people with a common experience of a particular phenomenon to understand better the topic being investigated. These usually lengthy interviews are often guided by the researcher's theoretical framework and can be conducted face-to-face, online, or using a mobile device (Carpenter and Suto 2008:82-85; Roller and Lavrakas 2015).

There are three main forms of interviewing: unstructured, semi-structured and structured. Unstructured interviews start with one main broad question, enabling the interviewee to respond freely, in as much detail as they wish, before the interviewer seeks more information about what they think was interesting in the participant's account (Bryman 2016:466-498). This type of interview allows participants to develop ideas without constraints and explore the topic of interest in a broad context. However, it can be difficult to keep the focus on the phenomenon of interest as these interviews may generate a lot of irrelevant data that will require the researcher to spend more time on the data collection and transcription process (Gray 2018). On the other hand, structured interviews are most commonly used to collect data for quantitative analysis as they comprise closed-ended questions based on the researcher's prior knowledge of the topic of interest (DePoy and Gitlin 2016b; Gray 2018). Researchers seek to standardise the questions and each respondent is asked the same questions in a specific sequence.

In-depth or semi-structured interviews use a range of broad open-ended questions in the form of a topic guide created in advance of the interviews (Gray 2018). It is a more flexible type of interview and allows additional 'probing' questions to be included that were not anticipated at the beginning of the interview to explore the topic (Gray 2018) further. This type of interview can be conducted in several ways: face-to-face or by telephone or video calls and is characterised by rapport being established between interviewer and interviewee in an informal setting (DePoy and Gitlin 2016). Focus groups, also known as group interviews, are also commonly used in qualitative research. These were not considered appropriate for this study as the aim was to explore individual opinions and experiences and not to create a group narrative focused on a shared problem (Bolderston 2012). In addition, the topic of

interest in this study was quite sensitive and I felt that participants would have been less willing in a group setting to share their experiences of managing a CMSD or of their employment situation (Liamputtong 2013). Telephone or internet interviews were not selected either due to other disadvantages such as the possibility of poor or lost internet connection, low video quality or audio quality, difficulty in establishing rapport between the interviewee and the interviewer and issues related to informed consent (Ravitch and Carl 2016).

Semi-structured interviews were chosen as the most appropriate data collection method in the qualitative component of this study. In proposing the study, I had conducted comprehensive literature reviews (Chapters 2-3) and engaged in discussions with colleagues and other experts at conferences. These all contributed to the development of an interview guide which became the basis for exploration in the in-depth interviews. The interview guide (see Appendix 5.3) was reviewed by the supervisory team and revised as necessary. The final version was included in the ethics submission to the Coventry University Research Ethics Committee. It was also important for me to prepare for the data collection process as my experience in conducting qualitative interviews was limited. Although I received guidance from the supervisory team, I also attended a course in qualitative interviewing at Oxford University (Appendix 5.4), which allowed me to practice my interviewing skills and helped me to begin to identify how my own understanding of, and assumptions about, the phenomenon of interest might influence the data collection process. It also provided me with a number of pre-interview exercises that were performed with other researchers and a checklist of items to consider at the preparatory stage of this process.

The first step was a bracketing interview involving myself as an interviewee and my DoS as an interviewer to assist me in identifying and reflecting on the presumptions, beliefs and values I had about the study topic (Tufford and Newman 2012; Carpenter 2013). A section of the transcription is provided in pages 186-187. The next step involved two pilot interviews to test with participants the accessibility and relevance of the questions (Roller and Lavrakas 2015), to give me the opportunity to practice and assess my interview skills, and to become familiar with the practical aspects of conducting a qualitative interview e.g. operating the digital recorder (see Appendix 5.5). I sent e-mails soliciting volunteers to assist me in two pilot interviews to a few colleagues at Coventry University who fit the inclusion criteria and had qualitative research experience.

The first pilot interview, which lasted 40 minutes, was conducted with a 62-year-old female senior lecturer in nursing with expertise in qualitative research who had a history of chronic low back pain. At the end of the interview, I reviewed the interview guide and questions with her and asked for feedback, for example, if the questions were appropriately open-ended, logical, and clear or if she felt that any important questions were missing. She suggested that double or multiple questions should be avoided and that I could have been more effective if I had probed her responses more thoroughly. The second pilot interview was arranged with a 55-year-old male IT technician who had rheumatoid arthritis. The overall feedback on this interview was positive and he highlighted that the discussion about his previous and current work experiences could be quite useful as they revealed differences in employer behaviours that he had not considered before. After the two pilot interviews, I revised the interview guide accordingly. The pilot interviews were transcribed verbatim, and the pilot interview experience was discussed in detail with

the supervisory team. The data from these interviews were not included in the main data set. The steps taken to formulate the interview guide are depicted in Figure 5.2.

5.7 Interview procedure

Prior to each scheduled interview, I contacted the interviewees by e-mail to answer any questions they had about the topic or their involvement in the study and to build rapport. The e-mail included an information leaflet (Appendix 5.2) with further details about the purpose of the study, the interview process, confidentiality issues, the length of the interview, and other contact details. Individual face-to-face interviews were arranged and carried out at a quiet meeting room at Coventry University or at a quiet venue that was convenient for the participant, e.g. a café close to their workplace or their house. The interviews were scheduled on a day and time convenient for each participant. Other considerations, such as the safety of the researcher, were also considered when necessary e.g. lone worker policies. At the beginning of each interview, I introduced myself as a postgraduate researcher at Coventry University, masking my professional identity of being a physiotherapist. I offered water, tea or coffee to the participants and made some small talk to help us both relax. I then showed them the digital recorder and explained that it would be used to accurately record their responses in order that I would not be distracted by having to take notes during the interview. All the participants consented to participate and be recorded.

Figure 5.2: Formulating the interview guide

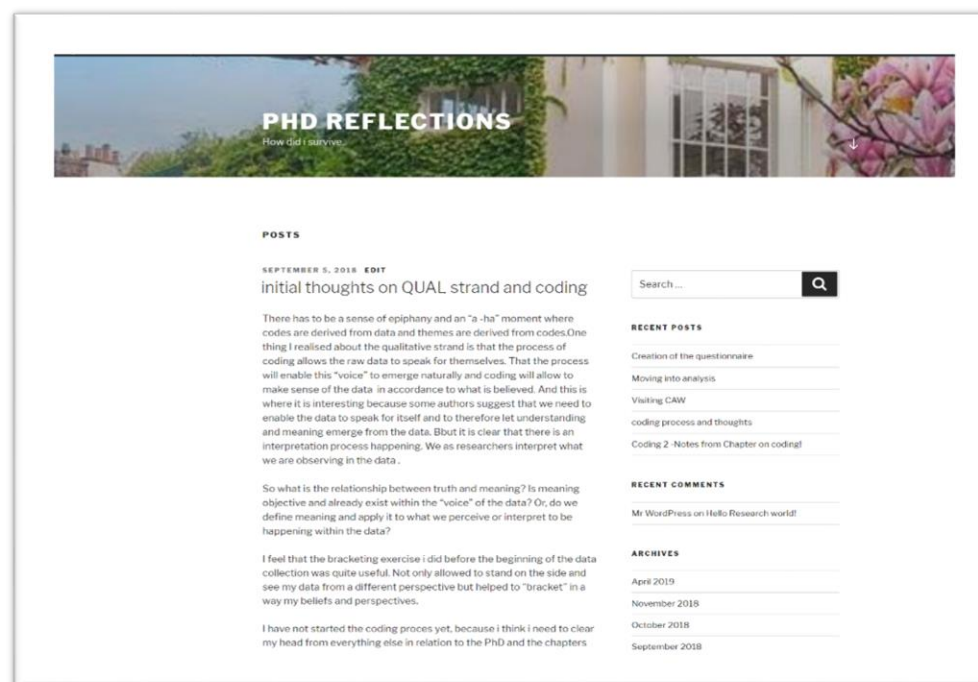


I summarised the aim and objectives of the study and explained that the interview would probably last between 45 – 60 minutes but that they could stop me at any point. They were also aware that they could refuse to answer any of the questions. Before the interview, each participant signed an informed consent form.

The interview began with a broad open question about the nature of their job that enabled the participant to respond with confidence. I used ‘probing questions’ and ‘paraphrasing’ throughout the interview to elicit information or clarify some of their answers. The recorder was turned off at the end of the interview when participants felt they had nothing else to add. However, if participants continued to make important comments at the end of the process while, e.g. getting ready to leave, I asked their permission to turn the recorder on again and capture these last ideas. This happened twice as participants were making comments after the

interview that they had not thought were important to include. At the end of each interview, I took the time to create some field notes, e.g. to comment on non-verbal behaviour or other remarks that were made after the recorder was turned off. I also used my online blog to capture initial thoughts and reflect on the interview process in more detail (see example in Figure 5.3)

Figure 5.3: An Example from the Online Reflective Blog



5.8 The role of the researcher in qualitative research

The role of the researcher in generating and interpreting data is central to qualitative research (Carpenter and Suto 2008). Researchers are not just 'objective' observers; they play an active role in every aspect of the research process, such as, framing the interview questions, engaging and interacting with the study participants and interpreting the data (Hesse-Biber 2010). Who we are, as researchers, and how we think matters in qualitative research as *"a researcher's background and position will affect what they choose to investigate, the angle of investigation, the methods*

judged most adequate for this purpose, the findings considered most appropriate, and the framing and communication of conclusions” (Malterud 2001:483-484).

Therefore, ‘reflexivity’ is an important concept as it refers to strategies that can help researchers understand their complex role in relation to others and become aware of pre-existing assumptions and explanations they have established about the 'real world' (Carpenter and Suto 2008:125-128).

Reflexivity can be achieved by using a number of strategies such as bracketing interviews, field notes or memos and reflective journals (Carpenter and Suto 2008; Savin-Baden and Howell Major 2013; Dowling 2006). As Carpenter and Suto (2008:125) suggested, addressing the concept of reflexivity: *"enhances the quality of research by making explicit the deep-seated views and judgements that affect the research topic, including a full assessment of the influence of a researcher's background, perceptions and interests on the research process"*.

Reflexivity can be viewed as a continuum and requires continuous critical questioning of the researcher's identity and feelings within personal, professional, social and cultural contexts, and in relation to the participants (Attia and Edge 2017).

Four different types of reflexivity (personal, epistemological, political/social, feministic) are discussed in the literature (Dowling, 2006); however, only personal reflexivity was considered relevant and addressed in this study. Personal reflexivity requires researchers to reflect on their values, behaviours, thoughts and aims and explain how these shaped or changed the research process (Gray 2018). This is commonly achieved by writing critical reflections in a journal or a diary throughout a study (Dowling 2006). Bolton and Delderfield (2018:9) define reflection as an *"in-depth review of events...that the reflector attempts to work out what happened, what they thought or felt about it, who was involved, when and where and why and what*

these others might have experienced and thought and felt about it from their own perspective". An online reflective blog (Figure 5.3) and diary was kept from the beginning of this qualitative phase in which I reflected on the research process, the difficulties I encountered while recruiting participants and the personal obstacles I had to surpass while interviewing people with different opinions and attitudes from mine. After each reflection new objectives were identified that were put into action for the next interview.

In using reflexivity, I engaged in ongoing critical self-questioning to identify the values and beliefs that derived from my experiences as a physiotherapist in Greece and the United Kingdom, including personal and professional changes I had made as a result of these experiences. The following are examples of how reflection after each interview contributed to the reflexivity process:

After a nervous start, the discussion began moving well. I gradually became aware that this woman knew relatively little about the strategies offered at her workplace. As she relaxed and began chatting, she remembered some strategies that she was offered from her previous employer but at the time she did not realise that she could have a personalised chair at her new office...

What emerged from that interview made me reassess my own assumptions and gave me some awareness of the complexities that she was facing. It was hard to live and work with psoriatic arthritis and the words she was using to describe her pain and her despair stuck in my head. This experience also reinforced the importance of taking time to establish rapport as she had to trust me before she felt comfortable to tell me about how embarrassed she was to have this condition as she was feeling "sick" just by using the word psoriatic.

Qualitative researchers commonly use a research diary to document the thoughts and feelings that influence the methodological decisions they make and the theoretical and/or conceptual frameworks that contribute to the study process (Dowling 2006). For example, in this study, the Socio-Ecological Framework (Plano-Clark and Ivankova 2016) helped identify the personal factors that could influence

data collection and analysis and reinforced the importance of critical reflection.

Personal factors relevant to this study included that I have had chronic neck pain for more than ten years, which forced me to change the nature of my job, my daily routine and affected my hobbies and sports. In addition, I have been working as a musculoskeletal physiotherapist for about ten years and I have primarily worked with patients with chronic musculoskeletal conditions. Such experiences informed my understanding of MSDs and also contributed to the assumptions that I developed about how they could be best managed. These assumptions reflected my perspective and beliefs but not necessarily the participants' making critical reflection essential.

Another strategy to help researchers achieve personal reflexivity, often associated with descriptive phenomenology, is 'bracketing'. (Gearing 2004:1430) described bracketing as a "*scientific process in which a researcher suspends or holds in abeyance his or her presuppositions, biases, assumptions, theories, or previous experiences to see and describe the phenomenon*". In this way, bracketing aims to assist the researcher to suspend their pre-determined views, beliefs and preconceptions by placing them inside 'parentheses' and enables them to focus on the phenomenon being studied (Tufford and Newman 2012). Rolls and Relf (2006) suggested that bracketing is a mechanism by which new researchers can be supported by their supervisory team.

In accordance with these authors' opinion, my supervisory committee encouraged me to participate in a bracketing interview in order to reduce the effects of unrecognised preconceptions related to the topic of interest, to support reflection and to enhance the quality of both components of the study (Tufford and Newman 2012; Carpenter 2013). The bracketing interview involved the Director of Studies

(DoS) as interviewer and the researcher as an interviewee. The DoS created a range of reflective interview questions to help me identify and explore my preconceptions about the study topic. The interview was conducted in a small meeting room at Coventry University and lasted one hour and twenty-five minutes. It was recorded and transcribed verbatim. A debrief discussion followed the interview that assisted me to reflect and write notes about the key issues that emerged and could potentially influence the data collection and analysis.

After reflecting on the interview, it was clear that my assumptions and values about rehabilitation and physiotherapy management of CMSDs and my personal work ethic could potentially cause me to judge the participants' perceptions and experiences. For example, I was expecting people to be able to work and that they would like to stay at work longer although I recognised the difficulties associated with the pension age changes. The following is an example of the bracketing exercise that contributed to my reflexivity process:

DoS: So how would you cope with someone coming to the interview who says "this is an opportunity to get sick pay and get off work"?

Glykeria: I don't think that these people will say that. I mean, with the changes that happened (pause) part of them might say "I want to stay home I want to retire and if I can get out I'll get out from work" but then if they retire early, some of them might get really bored because they got used to being social or the like working. Also, these people want probably to be heard...So I do not think that my participants will belong in this category.

DoS: After having this personal health experience, did you think: "I will try some acupuncture, I will try some reflexology, I will try some meditation"?

Glykeria: I didn't try acupuncture because physios in Greece do not do this so I did not try it.

DoS: Physios. What about the Chinese practitioners ...?

Glykeria: No, I would not go.

DoS: Why not?

Glykeria: Because I would not trust them.

DoS: So, we just need to highlight this that you wouldn't have gone to an acupuncture practitioner? What about an osteopath or a chiropractor?

Glykeria: No, I don't believe... They are not licenced in Greece, I mean they do not exist back home, and we are very sceptical about them. So, no I would not go.

DoS: Interesting. I have some questions here about other roles...Nurses, OTs ergonomists... What do you see as their role in long-term conditions?

Glykeria: I think, you know, that in regards to advise and prevention we are all going to be okay with that ... I can't see a nurse being an expert in analysing movement and changing the posture of an employee ... they can do bloods they can do jabs ... but if they have to do things like exercise or ergonomic assessment... they are not the experts in that.

5.9 Data Analysis

A total of 16 employees were recruited for this study. The first step was to prepare and manage the data for analysis. I decided to use a professional transcription company for two interviews as I found it hard to understand the participants' accents. I checked these transcripts for accuracy by listening to the recording while reading them. The rest of the recorded interviews were transcribed verbatim by me. The transcriptions were uploaded to NVivo 12 (qualitative data management and analysis software) and were organised by the participants' pseudonyms and date of interview. All memos and field notes were transferred to the software as expanded write-ups.

In generic qualitative analysis, e.g. not directed by a specific qualitative methodology like phenomenology or grounded theory, there are no specific procedures for analysing the data and there are many different possible approaches (Spencer et al. 2014b). I adopted a framework approach (Smith and Firth 2011; Gale et al. 2013; Spencer et al. 2014a; Spencer et al. 2003) to support the data analysis process which comprised five intertwined stages (Figure 5.4) and which provided structured guidance that is particularly useful for novice researchers (Spencer et al. 2014a).

Figure 5.4: Framework analysis process (Spencer et al. 2014b)

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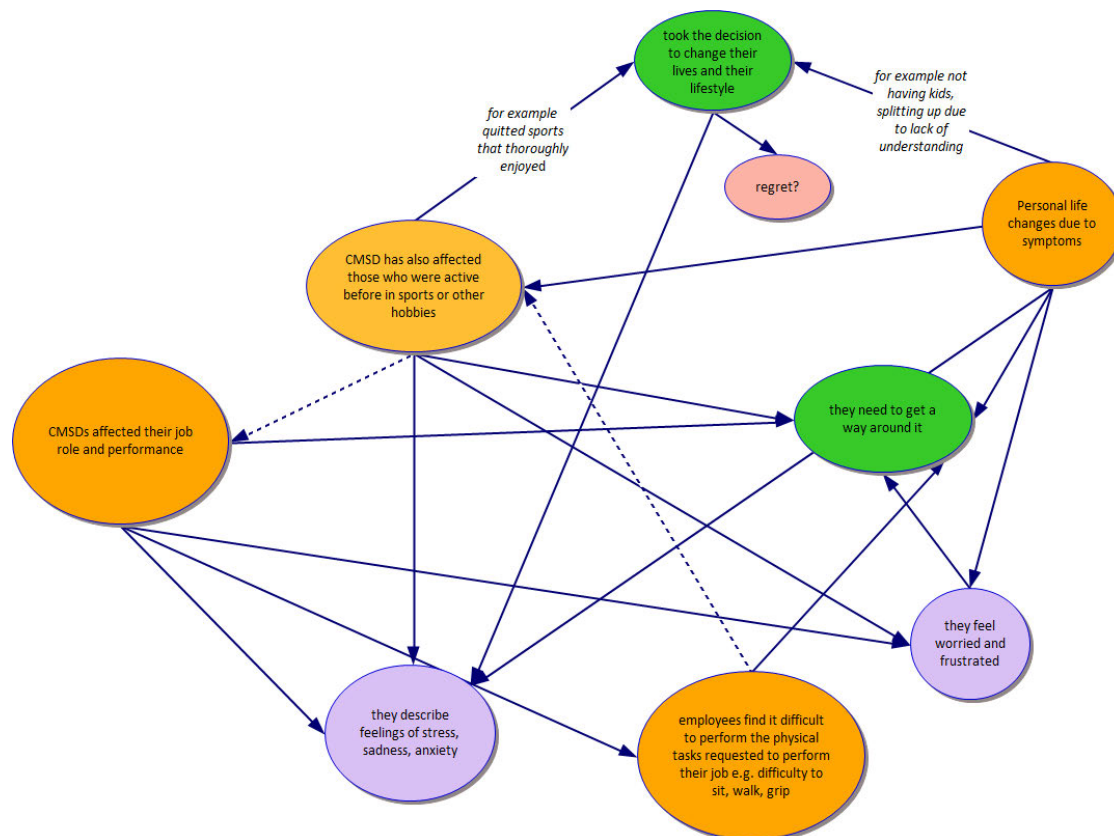
Stage 1. Familiarisation

To get a thorough overview, and become familiar with, the transcribed interviews as a whole, I read and re-read them several times. I also listened again to the audio files while I was reading each transcript. This helped me to incorporate the field notes' content at relevant points and annotate interesting data. Similarly, I used my online reflective blog to capture and reflect on insights and new ideas I experienced during this process of familiarisation. I reviewed the data line-by-line and identified topics of significance such as attitudes, motivations, incidents or areas that I felt informed the study aim and objectives. These sentences or 'data chunks' were highlighted, colour-coded and labelled in NVivo 12 to clearly identify and describe my initial interpretations of the data (see Appendix 5.6). This process is called 'coding' and a list of these codes was created and sorted alphabetically. A small description was assigned to each code to clarify or remind me of their meaning.

Saldana (2013:3) defines a code *"in qualitative inquiry [as] most often a word or short phrase that symbolically assigns a summative, salient, essence-capturing and/or evocative attribute for a portion of language-based or visual data"*. These codes were phrases that the participants introduced in the interviews, words that

depicted emotions, action or values, sentences that reflected participant experiences, descriptive information such as work or age, conceptual phrases or nouns describing the general subject of the highlighted sentence (Saldaña 2013). Early in the analytic process, one of my supervisors, an expert in qualitative and MMR, discussed the framework approach with me and independently coded the first transcript. We compared our coding decisions and how the framework approach might be applied to reduce the data. In addition, to further ensure the rigour of the data analysis process, I shared the next two coded interviews and the coding list with the supervisory team. The coding decisions - similarities and differences - were discussed and a consensus was reached. Although I could code more than one transcription per day, I decided to work more slowly to avoid superficial analysis and the tendency to reach analytic conclusions too quickly or to establish patterns or similar codes with previous interview transcripts. In total, 238 codes were created out of the 16 interviews and a coding matrix was created in NVivo 12 for each of them. Identifying codes and categories was considerably aided by 'mapping' exercises where preliminary thoughts were mapped (first with pen and paper and then using the software Inspiration 8). This was useful as codes and categories became clearer throughout this iterative process. Figure 5.5 represents an early thematic map with initial ideas that later transformed into codes and categories.

Figure 5.5: Example of the preliminary thematic map with under-developed codes (the dotted lines represent a weaker link whereas the full lines show clear participants' voices)



These are largely under-developed and have no central organising concept as it is evident that they cannot be captured in a few words but need a relatively bulky description to serve their purpose. This process helped me to gather the codes together by merging those that were represented by the same or similar phrases. This preliminary coding list (Figure 5.6) enabled me to compare the data more efficiently in the next stage.

Figure 5.6: Example of the preliminary coding list

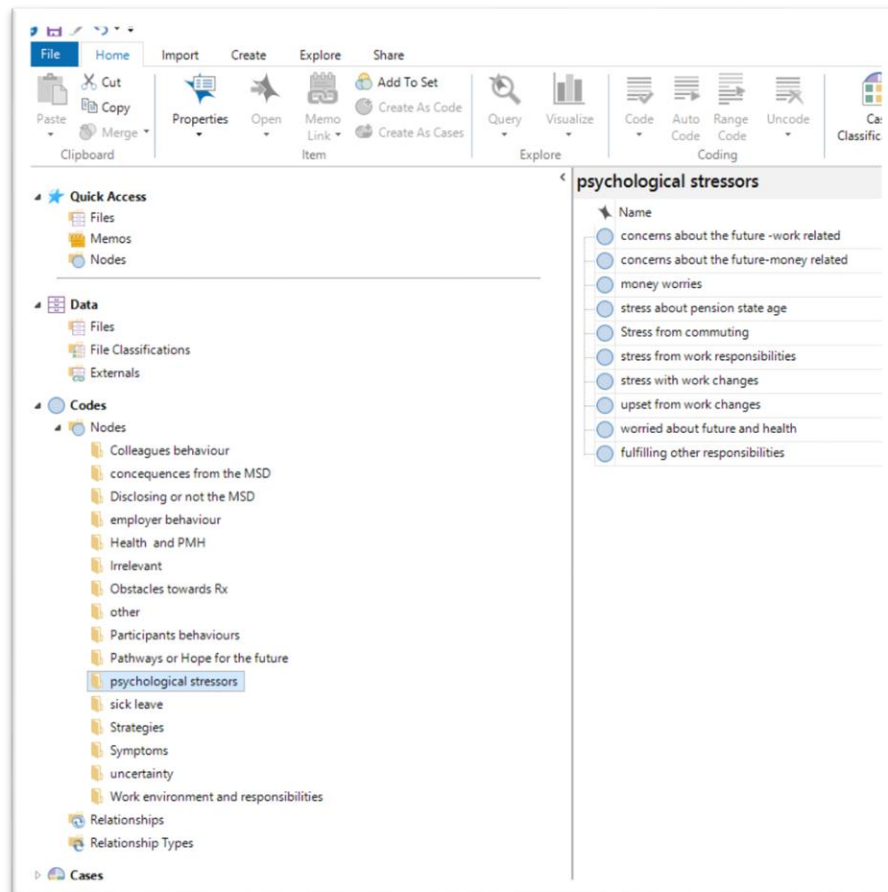
Name	Description
aware of retirement changes	this relate to those who were aware that changes in pension would come
being tired	being out of energy
beliefs about condition	strong beliefs about the condition such as genetics
Break at work	frequency of work break and what people do at that time
building design -negative	This relates to poor building design
change of life plans due to MSDs	This relates to personal or social changes that people had to do as a consequence of the MSD
changes to pension age	This about what people think and feel for the changes
changing jobs due to MSD	Work changes (any type) due to MSD
changing jobs-other reasons	Probably for the folder -other-

Stage 2. Constructing a thematic framework

At the end of the familiarisation process, I was able to identify important emerging items and concepts that were relevant to the study aim and objectives. After reviewing the coding matrix and considering the interview guide again, I began to construct, using the example provided by Spencer et al. (2003), Spencer et al. (2014a) and Smith and Firth (2011), a thematic framework working initially with the first three transcripts and then the other interviews. Codes with similar meaning descriptions were grouped as a specific category. Categories with comparable meanings were also then grouped together under broader titles. Some data did not seem to fit the emerging patterns, but it seemed important not to lose them in the process, so they were grouped in a category labelled 'other', which could be accessed anytime. Other data clearly did not inform the study aim and objectives, and a category labelled 'irrelevant' was created outside the framework. An example is provided in Figure 5.7.

Figure 5.7: Example of the category development in NVivo12

The categories are depicted at the left-hand side and the codes on the right column. In this example, the category 'psychological stressors' is highlighted.



Stage 3. Indexing and sorting

The labels and descriptions used for the raw data were revisited and carefully examined to determine if they accurately reflected the interview data and if coded content needed to be moved to different categories. The emerging categories were then reviewed in relation to the study aim and objectives and, as the structure of the framework was flexible, they were constantly refined during this stage of the analysis. The data were further reduced by bringing categories with similar meanings together to form the initial themes, which remained descriptive and grounded within

the data. This process created a 'tree' diagram in NVivo12, which helped the organisation of the data and facilitated the next stage. This was a time-consuming process but an important one as the aim of data management is to make the data easy to navigate and the analytic process transparent.

Stage 4. Reviewing data extracts

As a result of the previous analytic stages, eleven sub-themes were identified and between four to nineteen categories contributed to each of these themes. At this stage, I needed to look again at the 'irrelevant' folder and make sure that none of this data should have been incorporated into one of the categories. Then I looked at the whole data set with a critical eye to re-evaluate the links between codes and categories and categories and themes. This led to a further refinement of the 'tree' diagram (Figure 5.8) as some categories needed to be sub-divided and some themes to be merged because they were too narrowly defined (Smith and Firth 2011). Finally, five themes emerged: Impact on wellness, strategies and facilitators that support managing a CMSD, perceived barriers related to management, employees' approach towards to living with a CMSD and emotions and beliefs about future employment and retirement.

Figure 5.8: A thematic map with a single overarching theme, the contributing categories and example codes (the dotted lines represent a weaker link whereas the full lines show clear participants' voices)



Stage 5. Data and Summary display

The previous four stages of the thematic framework represents a useful general approach to data management and the analytic process (Spencer et al. 2014a). It is possible to add a fifth stage where data are summarised by case and by sub-category and each participant/case is displayed in a matrix-based table. This stage is called 'data summary and display' where each summary is depicted in the appropriate cell in the matrix (Spencer et al. 2014a). It is based on the intra-case

analysis and cross-case analysis described by Matthew and Huberman (1994) as: *"primarily designed for use with verbatim data where themes and concepts are interwoven and interspersed i.e. 'fractured discourse'"* (Spencer et al. 2014a:283).

However, this step did not seem to contribute further to the data analysis or the study objectives and so the decision was made to omit it.

5.10 Strategies used to ensure the rigour of the study

The methodological quality of qualitative research is commonly evaluated by assessing the concepts of credibility, transferability, confirmability and dependability (Guba 1987). Together these criteria provide an assessment of the overall trustworthiness of the study (Shenton 2004). Credibility refers to the congruency of the findings with reality and it relates to the extent to which the qualitative findings can be trusted and that authentically represent participants' experiences (Carpenter and Suto 2008; Graneheim and Lundman 2004). The credibility of the qualitative component of this study was enhanced by the attention paid to reflexivity and the consistent use of my personal online blog and journal. In this way, I was able to monitor my thoughts and assumptions about the research topic and reflect on what the participants reported. Credibility was further supported through peer review by the supervisory team and advisory support from academic staff who were experienced in using NVivo. In addition, the sampling strategy used ensured that only participants with relevant knowledge or experience of the study topic of interest were recruited (Silverman 2017). Lastly, a 'negative' case was identified that did not fit the emerging understanding of the study topic. Reporting 'negative' cases improves the credibility of a study and helps to adjust the questions asked in subsequent interviews (Anney 2014). However, analysis of this case indicated a specific, personal, and idiosyncratic interpretation of aspects of the study topic by

one participant that was not reflected in other participants' narratives (Silverman 2017). These particular data were not included in the overall data analysis but neither were they discarded.

Transferability refers to the degree that the process or the findings of a study may be applicable and relevant in other contexts and with other groups or individuals (Guba and Lincoln 1994). Transferability was achieved by keeping detailed written descriptions of all aspects of the study process (Guba 1987) so that readers could appraise the quality of the study design and implementation and replicate or adapt aspects of the design in different settings. The third criterion of dependability refers to the stability of the data (Ravitch and Carl 2016:188). Throughout the description and discussion of this study, thorough justification of each component of the study design has been provided to ensure that the methods used to collect, analyse and interpret the data are made explicit and transparent. Finally, confirmability ensures that the findings accurately reflect the experiences and beliefs of the study participants of the study rather than the preferences and understanding of the researcher (Ravitch and Carl 2016). This was achieved in this study by engaging in a structured reflexivity process and consistent peer review by the supervisory team.

Chapter 6: Research Methods - Qualitative Findings

6.1 Qualitative Findings

This chapter presents the findings from the analysis and interpretation of the interview data. The analysis was guided by the framework approach (Smith and Firth 2011; Gale et al. 2013; Spencer et al. 2014a; Spencer et al. 2003) as described in the previous chapter and a detailed description of five themes represents the findings of the qualitative component of this study. Each theme is described in detail and illustrated by selected data e.g. significant participant statements.

6.2 Socio-demographic characteristics of the participants

A total of 16 employees comprising 4 males and 12 females were recruited over 3 months for this study. These employees were working in the public or private sector in a variety of companies across the West Midlands. Twelve participants were performing professional, managerial, or administrative work - the other three participants in skilled manufacturing, construction, and technical installation. The socio-demographic characteristics of the participants are presented in Table 6.1. Pseudonyms were given to ensure the anonymity of the participants and all information related to their work sites was concealed. The participants identified themselves as having at least one chronic musculoskeletal disorder. The participants' ages ranged from 50 – 64 years.

The data analysis revealed five main themes: Impact on wellness, strategies and facilitators that support managing a CSMD, perceived barriers related to management, employees' approach to living with a CMSD and emotions and beliefs about future employment and retirement. Together these themes illustrate a

multifactorial link between experiences, attitudes and the management of CMSDs within the ageing workforce.

Table 6.1: Socio-demographic characteristics

Participant pseudonyms	Age	Employment	Interview duration	Current CMSD
Claire	58	Academia	70min	Chronic pain
Debra	54	Mental health nurse practitioner	45min	Scoliosis and chronic back pain
Sarah	52	City council (administrator)	58min	Chronic hip pain
Nicky	55	Nurse practitioner	50min	Chronic back pain
Teresa	57	Academia	45min	Scoliosis and ankle pain
Anne	63	Customer service	75min	Rheumatoid arthritis
Andrew	51	Mechanical engineer	52min	Ankylotic Spondylitis
Jessica	52	Human resources	50min	Psoriatic arthritis
Kathryn	50	Accountant	40 min	Low back pain
John	62	Mechanical engineer	40min	Arthritis
Laura	52	Travel agent	45min	Chronic neck and shoulder pain
Maria	60	History teacher	42min	Chronic back pain
Sally	51	Prevent Education Officer	79min	Psoriatic Arthritis
Annette	51	Laboratory technician	40min	Arthritis
Jack	64	Design engineer	62min	Ankylotic Spondylitis
Josh	55	IT engineer	55min	Arthritis

The final categories that contributed to each theme are depicted in Table 6.2.

Theme 1: Impact on wellness

The first theme ‘Impact on wellness’ focuses on how CMSDs have affected different areas of the participants’ lives, including work, social life or family.

Participants talked about the challenges they faced at a physical or personal level, the changes they chose to make or were forced to make, and the difficulties they experienced due to their condition. Another area of discussion suggested that there

was a mental and emotional impact caused by uncertainty and stress which at times also affected their ability to fulfil their roles.

Table 6.2: Themes and final categories

Main themes	Final contributing categories
Impact on wellness	Work performance
	Physical issues
	Mental stressors
	Personal life
Strategies and facilitators that support managing a CSMD	Taking a healthy approach
	Strategies offered at work
	Supportive environment
	Managing the condition outside the workplace
Perceived barriers related to management	Workstation design and environment
	Bureaucracy and procedures
	Unsupportive Colleagues'
	Barriers with the management team
	Healthcare System
Employees' approach to living with a CMSD	Work ethic
	Attitudes on management strategies
	Take responsibility for self-management
	Disclosing the condition
Emotions and beliefs about future employment and retirement	Fear of employment
	Motivation to work longer
	Government changes and healthy retirement

All the participants discussed how the CMSDs affected their work performance. Participants' roles were compromised in different ways; for example, those who were doing a sedentary job complained about getting stiff whereas those, who were engaged in work that required them to be more active, complained about

increased pain as a result of the amount of lifting and walking they had to do. John gave an example of how osteoarthritis affected his job role and described a typical day at work:

Well, when you have arthritis in your hands, you tend to lose strength in your hands. So, because most of the time (pause), it was quite physical work, I found it (pause) like, I work with a range of tools so like spanners and screwdrivers and occasionally I'd find that I can't grip. So, what you tend to do is you sort of getting around it somehow. You might originally use one hand, then might get a way to use two, to do whatever you're trying to do. So, you sort of find a way around it, but it was getting more and more (pause). I found it difficult, really hard.

Similarly, Anne expressed that RhA disturbed her sleep and that created a general feeling of tiredness which affected her job performance:

It affects my ability to work because obviously, if you're tired, and you've got to get up at half-past six in the morning, and you've got no option if you've been waking up half a dozen times in the night (pause). You've got no option with staying in bed and waking up more naturally when you haven't enough sleep because, as I say, I keep waking up. But (pause) that's mentally exhausting too. You're already tired, so mentally, you're not really working at full speed, And I can literally blink, and I'm asleep in the chair. You are thinking: "Oh". And then you think: "I'm awake, but my eyes are closed".

Participants commonly referred to the physical issues related to the CMSD. For example, participants discussed the side effects of their medication. For some, taking tablets was the main way they managed the CMSD. However, employees described how the medications made them feel tired or drowsy or caused them to develop symptoms such as stomach-ache or migraines that prevented them from going to work. Debra, a nurse practitioner, mentioned that the pills prescribed for her inflammatory musculoskeletal condition were causing her mental, physical and work-related issues. It had been a long-term and on-going situation until her consultant changed her management plan:

It was so bad that I just spent the whole weekend lying on the floor with my head in a bucket, like for months, and I just couldn't carry on. So, I was prepared to give up work because I couldn't carry on.

Sally also described how she would feel exhausted even after small everyday household activities:

I feel that part of the condition is that my immune system is very low. And I get tired a lot more easily than I would have done before. Physically tired, not mentally but physically. So, if I've done something like, I do not know, clean the house, bleach the house, and it is taking me two hours. Then that evening, I'll be suffering.

Participants identified many physical activities - movements or tasks or both - that they could not perform or had difficulty doing due to the CMSD. This category included work-related or fundamental functional activities, such as, going up and down a staircase, lifting or driving a vehicle. Some of the participants expressed their frustration over time as they used to be quite active in their personal lives before acquiring the CMSD. Participants described how their body felt and behaved differently each day and, as a result, they were unable to perform tasks in the same way each day. Sarah explained how staying in a position for a long time made her feel unstable:

A couple of steps I can manage, [from the office chair] and get my balance back together. Sometimes I feel so stiff that I cannot stand on my feet.

Another example was given by Sally related to her ability to climb stairs:

Sometimes I go to meetings and, if there are steps, then I will just say that I've got mobility issues so I will take the lift. A couple of steps I can manage, but if it is a lot of steps, it just takes me ages to get to them. But you know, sometimes I'm all right. I can do it.

The participants all attributed mental stressors, and associated emotional impacts, with the CMSD, the changes in state pension age and stressful factors

related to the work environment. Most of the participants experienced increased work responsibilities that affected their mental health status as well as their physical status. Claire, a nurse lecturer, experienced a significant increase in workload and pressure due to being a new member of staff at her workplace, which caused her considerable stress. As she explained:

That's the sort of thing that I find makes me feel exhausted, is that feeling of not (pause) I do feel quite exploited at the moment, in terms of equity of workloads. And I think when mentally you're feeling kind of under pressure, then that kind of makes you feel physically more tired, physically more kind of, you know, sort of struggling a little bit. This is even worse when you already have chronic back pain.

Some participants discussed the changes they made in their personal life as a result of the condition. A few participants were forced to stop leisure activities or other activities and interests in their personal life. As Jack explained, he had changed his previously active lifestyle to a more sedentary one due to his condition:

I can't move now very fast (pause); I am not very agile. I do not undertake certain sports. I used to play rugby and football occasionally, but since AS (ankylosing spondylitis), I found it difficult to run or take part in contact sports. I do feel vulnerable. I would feel vulnerable if I went back into a contact sport because of my back and the potential for injuring it.

Two female participants talked about the family life changes they had to make due to the CMSD. These changes are related to the actions, behaviours or both, of their loved ones towards them or decisions they took to prevent further health issues. Some of those choices made them sound deflated and regretful. As one of them said:

When I was pregnant, I had so many problems because of my condition (pause) I was in so much pain. And as the babies got bigger, it seemed to put pressure on the lower limbs. I would have had more children, but I felt I couldn't.

Finally, some participants were unable to maintain full-time work in their role as the job-related tasks were too difficult for them. However, those who were below the age of 60 seemed uncertain and afraid of the future as they had not given any thought to the implications of going part-time. As Kathryn explained:

I'm very much thinking that I need to change my job because I don't believe that sitting at a desk for the next 17 years is going to leave me in a position where I'm going to be fit to enjoy retirement in the end...I should have been looking at this, to be fair, already as I am unsure of the process and it might take a long time.

Theme 2: Strategies and facilitators that support managing a CMSD

This second theme explored the strategies that participants used to manage the CMSD at the workplace. It included strategies that participants were offered or made aware of through discussion with their line manager or after reading posters and leaflets that were available in the staff rooms of the working site. Others found useful strategies that were suggested by a healthcare professional and followed their advice for self-management.

The first category revealed some of the healthy approaches that participants adopted to manage the condition at the workplace. This category referred to the strategies they used without being encouraged by their employer. A majority discussed how they self-manage their condition using strategies such as monitoring their sitting time, improving their posture, and lifting carefully, e.g. with ergonomic equipment. Other participants carefully monitored or lost weight and took supplements to decrease pain. Laura described how she became more active and efficient in the workplace by using a smartwatch:

So, it tells me, you know, “come on you have got only done so many steps this hour get up and move”. I also tend to - If, for example, I go to the toilet - to try and go to the floor downstairs...and then walk back up.

Jessica also highlighted the importance of self-managing the condition at work by making simple changes in her everyday routine:

You have to self-manage, as there no point whinging that you are stiff if you don't get up and move around when you know that you need to. So, you do need to be responsible for that even if it's “I'm going to go make a drink”, or just walk around the building and then come back; that's all it takes. But you are also responsible for that because you're the only person that knows if you are getting stiff or not.

Employers offered strategies that were integrated into the workplace policies and information could be found on the company's website or through their line manager or posters. These strategies included an ergonomic assessment and management plan (online or face-to-face), manual handling training and consultations with occupational health personnel to provide employees with advice if needed. Josh described the process he experienced at his workplace when he first started his job:

You do the assessment online first, and you tick all the boxes to say, you know... that, this happens, I've got a pain here, here, and here and then they come out, and they look at your desk, they look at the way your keyboard is, where your monitor is, you know, make sure that you're sitting in the right position.

Most of the participants described how their organisation offered physiotherapy services, a gym membership or both whereas other companies provided private health insurance. Two participants accessed psychological or cognitive therapy sessions, such as mindfulness and cognitive behavioural therapy that was suggested by their manager or GP as a way to manage symptoms, such as, depression and work stress related to the CMSD. Other participants were offered

and used specific equipment to help them on a workday. These included lumbar spine support pillows for their office chair, wrist braces, trolleys at work to carry books, folders or printing copies and other aids to assist in practical activities, e.g. jar openers and pencil grips. A few participants were given the options of flexible working hours or working at home to maximise their work capacity. Jessica explained the difference between her previous and current employers and their attitude towards flexible working hours:

Sometimes I can have a bad night with the arthritis and in the morning, I had to do my exercises and take medication and still not feel well. My previous job offered me “Flexi-time”, which meant that if I couldn’t always be in at 8:00 [due to a bad night with arthritis], I could stay and work from home and attend the day later. That was really useful and beneficial.

Josh also discussed positively his current workstation after consulting with someone for the occupational health team. He emphasised that doing “a workstation assessment was a formal compulsory process that he went through when he joined his company”. As he explained:

Well you have to do a DSE (display screen equipment) assessment when you come in anyway. So, I actually got two screens and that thing that supports your lumbar spine. That’s all from work and I got a footstool too.

Participants also felt that their colleagues and employers were supportive and empathetic when they saw them struggling and would help them with particular tasks that they found difficult. Colleagues who had themselves experienced a musculoskeletal problem were perceived as being more understanding. Sarah illustrated this point by explaining that her role involved a lot of lifting (books, paperwork, administrative documents) which she could not do easily and that, as

they all worked in the same office, colleagues would help her with these small tasks.

As she said:

If there are stuff I can't pick up or lift, then I know they will help. They will do some of the walking to other buildings for me if I've got papers to take etc... So, in that respect, yeah, they do support me.

Kathryn explained that her team had 'a good bond', they have known each other for many years and she generally found them very supportive:

We're a very small team. We've worked together for quite a long time, so in general, the team was very supportive of any issues that any of us have. We all have the occasional aches and pains and so on and so forth, so there's never been an issue.

Similarly, Annette described how those colleagues who had had a similar experience or injury were more likely to empathise with her and be helpful:

I think we tend to help each other, which is a good thing. For example, my colleague had a hip operation, and he is nearly back to full fitness, but we sort of like help each other out and understand, you know ... him being through his operation and me with my arthritis. So, we have an understanding, if you know what I mean.

Some participants felt that large organisations would support them in a more timely and effective way than small or medium-sized companies. A few participants identified their line manager as the 'face' of the employer. If this person was supportive and caring then they described their employer or company as supportive. John's statement illustrates this connection between manager and employer:

My line manager is pretty supportive because he gets the view that he does not want to lose his guys as a result of an injury... if I needed to take time off to get things sorted out with my back, I could, and that was always seen as a benefit to the company, to keep you at work.

Similarly, Sally explained how empathetic her line manager was and what a difference it made to her own work performance:

I am in a lot of pain and there is no painkiller that can touch this apart from tramadol. And that just space's me out, basically. So I take it at night and then by 11 o'clock the next morning I'm functioning. But in this new job, the line manager is really great. He just lets me get on with my job but he doesn't micromanage or anything like that. You know he is very good. So, if I say that I am actually going to work from home today he'll know that I will work from home. I might not work until 11:00 o'clock in the morning but then I will go through to 7-8 o'clock or do more in the weekend.

Lastly, participants discussed in some detail how they managed the condition outside of the workplace. Participants hoped to be able to remain healthy because they wanted to enjoy both personal activities and perform well at work. Some of them used specific equipment to help them in their personal and work lives such as shopping trolleys, travel pillows or splints. Other strategies they described included consulting a range of health professionals, such as physiotherapists, GP, sports therapists, and osteopaths. Some regularly attended a gym or specialised group exercise classes, such as Tai Chi, back pain management, clinical Pilates, and yoga. Maria explained that she was keen on trying different types of exercise for her chronic back pain:

I still go to the gym but I'm actually going to start doing Pilates. I haven't done that before. I don't want to stop exercising because I think that's quite important. But also I do exercise least twice a week sometimes three times. So I go to a gym not a sports centre here but somewhere near where I live. And I used to do a lot of walking i don't do that so much anymore now.

Annette discussed her visit to a physiotherapist and a consultant. She was very pleased with her treatments and felt that she would not be able to manage her arthritis without them:

My physiotherapist is very good. She listens, she understands, erm and I am happy with the treatment that i have had and the exercises of course. And also the consultant gave me the first steroid injection in February which has lasted a long time (thinking) up till until now. Like I said I am having the second one tomorrow. And I think that, just I think, it just manages the pain. You know, I don't think I could have coped.

Theme 3: Perceived barriers related to management

All older employees described the barriers or obstacles to management of their condition that they experienced. These were mostly related to their work environment, behaviours of their co-workers, managers or employers, and other external factors, such as bureaucracy, and waiting times in the NHS.

Participants felt that the set-up and the workstation design and environment, were not 'fit for purpose', for example, the 'hot-desking' policy meant that employees did not have their desk or chair that could be personalised for their needs. They expressed strong views about how the new trend, implemented by many employers, of sharing big or 'open space' offices or hotdesking affected how they were able to manage their condition and how this type of work environment increased the stress they experienced. Sally's comment illustrates the participants' concerns:

I think the big disadvantage of 'agile working' (hotdesking) is that there's no stationary position. They did give us these rucksacks to put our laptop in but that's not good because it is heavy on my shoulders and my back and is about this big (demonstrates). I used to have my desk and a chair personalised to my needs, but now I feel like Dora the explorer with a bad back.

Similarly, Nicky discussed the use of the office chairs provided at work and how uncomfortable they were:

We are all together in a big open plan office and they gave us those awful chairs. They were awful! I mean I literally couldn't sit for longer than half an hour and I find I'm struggling.

Participants identified aspects of their workplace environment and the building facilities as their primary obstacles. These included buildings without elevators, cold rooms, not enough space when hotdesking, and difficulty in parking. Anne highlighted the challenges associated with working in an old building with poorly designed facilities:

I was in an old Victorian building with five floors and three printers that are not usually working. If I needed to do printing or scanning, which is mainly part of my job, I have to walk down the stairs, then standing [at the queue] to only realise the printer is not working again. So, I have to go up two floors, and if I am lucky, I do my job and walk down to my office.

Similarly, another participant explained that the facilities in the building were somewhat challenging for her.

My walking had been affected so bad at some point that I was walking with a stick thing, like a crutch thing, you know, one. And people would be watching me hobbling up three flights of stairs. There was no elevator in the top floor where I was and there was no toilet or kitchen either. So, if I needed, I had to come down for the toilet; I had to come down to get a cup of coffee. You're taking the coffee up with one crutch and spilling half of it.

Participants highlighted a variety of obstacles in the workplace related to bureaucracy and procedures that affected how they managed the CMSD. Some did not know what assistance or services their workplace offered. They felt that they were not informed about what OHS could offer, how could they access them, and what strategies were available for them to manage the health issues in the workplace. Moreover, participants who had used an online OHS experienced the process of arranging an ergonomic assessment as very time consuming often experiencing a 3-6 months waiting time. Teresa described that it took more than a year to get an appropriate office chair:

... first, you need to do the online health and safety thing. So, I did the online thing, and then you wait. Eventually, the chair suppliers came in and had a look. And they went “yeah this is technically wrong for you, you need a higher gas lift chair”. And then they said “we do not do a suitable chair with our company” so we need to put a higher gas lift in this chair”. After months, they came back and brought the standard chair, exactly the same height as the one that I had already that still wasn’t high enough! So and it’s like “oh well you have to go back to the online safety training and raise a call that you need a different provider”. And I’ve spoken to the health and safety manager on several occasions, I’ve spoken to different line managers, and eventually one of them said “Oh I think you have to use the “access to work scheme” that makes the adaptations. But you also need though the online workstation assessment again as it is over one year that you’ve done it, so you have to redo it.”

Nicky had also encountered similar problems:

It took a year from start to finish. I actually wrote on my health form when I got the job that I need a chair with lumbar support and adjustments. I had one in my previous job, and it was perfect. You know I’m fine if I’ve got a chair, I’ve had longstanding back issues, and I am quite tall, so I need a different chair.

Those who used an online workstation assessment were not very impressed. They discussed that they could not ask for clarification or ask questions if they needed to and that it proved to be a lengthy and rather repetitive process. In Claire’s opinion the online ergonomics assessment was not appropriate because it was used by employers as a cheaper substitute than face-to-face access to an OHS or health professional:

When I had a proper workstation assessment done, I had a health professional watching me using the chair and in my workplace. I think it’s better if somebody else is sort of standing there, observing, and saying, “ooh, well that’s not right, you need a footrest, you need this, you need that”. With the online tool they ask these questions at the end about “are you happy with this, are you happy with that, yes, yes, yes, yes”, because you just want to finish it... So, I would imagine that lots of people have done that and it isn’t accurate.

Some participants described their colleagues as mostly unsupportive. They highlighted that the behaviour and the attitude of their co-workers could be an obstacle to their ability to cope with their condition. They explained that, in their experience, their colleagues did not want to help them with some of the tasks that participants physically found difficult or that some people manipulated the workload for their own benefit leaving them with extra work. Participants also thought that it was the line manager's responsibility to address these issues but that often this did not happen. Anne said:

We've got given a locker, and I'm like: why was mine way up high? So, that was hurting my shoulder by having to hoist everything up into there..." So, they really didn't ask people "Have you got anything that would stop you having lockers up, lockers down? My manager did go around and ask everybody "would somebody swap"? And no one wanted to swap with me.

Others felt that their colleagues did not recognise or acknowledge the condition and its' impact on their work-life. This was particularly the case when the CMSD was not obviously 'visible'. Participants suggested that people at work were not well informed about CMSDs and that they do not understand how they can affect a person's life. This was not only an obstacle to management of the CMSDs but also affected the participants mentally as they found themselves having to repeatedly explain the nature and effect of the CMSD. These opinions were particularly evident in participants who had a chronic inflammatory condition (e.g. ankylosing spondylitis, rheumatoid arthritis). For example, one participant explained that her condition is often misunderstood or that people simply had not heard about it:

The other thing is that people react differently because it's psoriatic. I have to say that word, and I hate that word. Whereas if I said, oh, I've got osteoarthritis people understand that and know that better. So, I

say arthritis, but sometimes people say “what sort?” and then I have to explain. And they just don’t get that either.

Debra also explained the effect of this general lack of knowledge and understanding:

And I think for them [colleagues] it must be hard because some days I’m absolutely fine and I can do loads and then other days I can’t. So, not many know, but when you do tell people I think because I seem quite fit and healthy, they just... I just think people don’t understand it at all.

Claire, in trying to explain why her colleagues are unsupportive, said:

I just think people filter it out... people say to me now, “oh, you’ve hurt your leg”, because I’m in sandals and they can see that I’ve got a stocking and I’m thinking, “no I’ve told you several times”. People have been told that I’ve had this and it’s an on-going chronic da-da-da, whatever, and I just think people see what they want to see.

Finally, three participants experienced working with colleagues who gave them a hard time at work even though they were aware that they had a health issue. For example, Andrew described a situation where one of his colleagues complained about his flexible working pattern.

It’s just a question of people who tend to make plans for you without asking you first or complain to the manager because you have been given some flexibility. I remember once someone started a rumour that I was slacking off and got paid the same amount as everyone. He actually knew I had a flare-up that period of time, but he probably thought I was faking this out. The problem was that the rest of the team believed him as you don’t necessarily discuss all your medical history with everyone just because you’re working on a project with them.

Participants identified the barriers to managing their condition that they associated with management teams in both their current and previous employment. Some of them felt that smaller organisations were not able to support their needs and others thought that it depended on how much the company valued the individual

employee. Jessica compared her current experience working for a large private organisation with her previous employment with a public organisation:

I've worked with other similar [private] companies and to be fair because they are bigger organisations they have been (pause) very supportive and very switched on, very geared up to helping us. But I worked briefly for this public organisation, and they were the worst to work for in terms of needing to make adjustments [for the condition].

Maria highlighted the lack of health conversations with her line manager. She explained that, although she disclosed her back-pain issues in an appraisal meeting, she was never asked about it again:

I haven't been asked anything and nothing and nobody sat down with me and said "OK how is your condition now, how bad is it, does it still affect your work? Or is there anything else that we need to do" so it has been said nothing along those lines.

Some participants described how they asked for help and clarification from their line manager but that they generally found that the managers did not have the knowledge or expertise to support them. For example, Kathryn said:

My line manager said to take sick leave if I was not feeling well. I do not think he really knew if he could refer me to the occupational team here, and I am not sure if we actually have one. It is not clear on our website and no one seems to know.

Five participants identified that the companies they were employed by, did not enable them to access OHS, and three others revealed that their companies did not employ health care professionals for their team. This meant that the OHS team comprised employees, such as, the accountant, designer or engineer who volunteered but who had no specialist OH experience. Nicky explained that their employer had implemented a rotational system whereby any employee could take a break from their normal duties and join the occupational health team for six months. As she said:

So, one day the IT person, who normally comes to fix your software problems, he comes in and assesses your workstation following an instructional document and checklist, and he is not sure about it either. So, the occupational health team is run by 'people' rather than a health professional.

Participants spoke about their experiences of obstacles related to the NHS and how this affected management of their condition. Some felt that the system was slow to respond to their health needs and that the waiting time to get an appointment at the hospital was long. Others felt that having more information about their condition and the symptoms they experienced would have enabled them to better understand what they could or could not do and to make earlier decisions about management. Most of the participants who expressed these views did not have a private healthcare provider associated with their employment nor could they afford private treatments. Anne felt that, due to lack of funding, she was not referred to physiotherapy. As she said:

So, I got to the physio for my arthritis, and she was marvellous with my wrists. But my arthritis affected my knees and my feet, and when I went back there she said: "Oh, you've only been referred for your wrists, you haven't got the funding".

Debra explained that her GP did not appear to believe her when she described her symptoms and it took several years for her to get a referral to a rheumatologist and it was only then that she got a definitive diagnosis and treatment.

I suppose I'm always used to people not believing me. Like, when I first had my arthritis for years I'd go to the GP and complain and say "look, these are my symptoms and my pain is severe and so on" and they'd say, "oh, we can't see anything your rheumatoid factor isn't high, it's nothing". And then they would say "come back when you have a flare-up". And I said, "but I'd be here every day because I'm in pain all the time". And that process took several years until I saw someone at the hospital.

Theme 4: Employees' approach to living with a CMSD

The fourth theme explored how the employees' attitudes influenced the way they managed the condition. There was considerable diversity in these discussions as participants often did not share the same experiences. The participants discussed in some detail their work ethic and their ability to work over a more extended time. They did not want to be perceived as different from other employees and they shared their experiences of consistently needing to demonstrate a good work ethic. Thus, most of the participants wanted to stay at work even on the days they did not feel particularly well. Sally suggested that people with CMSDs did not take sick leave as readily as their co-workers. As she said:

Yes, I would work with pain. Because it's been a feature of my life that I've just got used to having, you know...And I think in a sense people who have got chronic problems tend to probably work at times when they shouldn't because we've got used to it. So, for me, you know to have a day that is, "ah, the back's a bit sore" means "so what"?

Annette explained that her condition influenced her work ethic:

My work ethic is work. You know I don't like to have time off, I have never had time off with my knee. I've always managed it with painkillers, steroid injections, physiotherapy. Since I can manage my arthritis I can work.

Participants discussed their attitudes towards the management of their condition and the choices they made. The majority of them felt some of the strategies they used were helpful, but most of them highlighted that they constantly felt the need to self-manage and take the responsibility for implementing coping strategies. Sally stated that:

You need to take responsibility to self-manage. You need to make time. You make time for everything else, but you need to make time for yourself in terms of you know, go swimming or go back to yoga.

In Jessica's opinion people with a CMSD should not simply wait for someone else to implement a management plan for them but they need to learn how to self-manage:

It's fair to expect people to support you but you have to take responsibility for managing your own health and wellbeing before other people can help you do that. because at the end of the day its you and your disability and your condition you have to deal with it the best that you can.

Some participants found coping with the condition and their job responsibilities challenging especially if the work expectations were quite high and job-related tasks were complex or difficult. Others discussed that often workloads amongst employees were not equitable especially when employers did not hire enough members of staff. Annette, for example, explained that:

We need to prepare material, maintain equipment, collect glassware and do a lot of heavy lifting... I just think it's affected my arthritis as over the last five, six years we have only four people that work in there, and it's expected that you can manage the job. But obviously when one person is on holiday, or there might be another person off sick (pause) you know...

Teresa described that her increased workload was an obstacle to her self-managing:

If you are busy with your workload, and that's one of the biggest problems people have nowadays, you cannot find the time or space to self-manage and to do exercises or walk for a 20-minute break. Most days, I eat my lunch on my desk while working. There is no time to waste.

An interesting aspect of this theme was how participants expressed both negative and positive attitudes about disclosing their condition to their employer and work colleagues. Some discussed negative experiences related to previous employment experience and, as a result, they had made the decision not to disclose their CMSD to their current employer. Jack described a situation where revealing his

condition almost cost him his dream job. He also felt that if people could not manage their conditions in the workplace they would be easily replaced. As he said:

People need to manage their conditions... so that its recognised and that they still can make a positive contribution to whatever role they have... It's this animal instinct, where in the world of animals one is injured one is a predator. The injured animal will always try to walk normally to convey to the predator that they're not injured.

Some participants decided to reveal their condition to their line manager or the human resources department. In contrast, others felt they would only disclose to co-workers if the condition were visible, for example, wearing a splint or if the symptoms were obvious. Jessica explained that she could not stay seated for an extended time, as staying in one position could cause the arthritis to 'flare up'. She explained that it was vital to make people aware of this in advance as she often needed to stand up and move around:

I always have to let people know that I can't sit or stand for a protracted period of time in only one position because I will set and then I can't get moving again because of the arthritis. I usually tell people at the start of the meeting that I will just have to stand up and move around so that they're aware of it. They don't think I'm going to make a dash for the door (laughing).

Theme 5: Emotions and beliefs about future employment and retirement

This theme explores the participants' emotions and beliefs about future employment, retirement and the pension state age changes they were facing. In discussing these topics they often illustrated how they felt through examples from their everyday work life. Anger, fear or frustration were words often used by the participants in relation to these topics.

Some participants were afraid about their current and future employment and the consequences they might face due to needing to manage a CMSD. John

discussed his experience when he applied for a role in a different company and how this changed his attitude to disclosing his condition:

I wanted to change employment and I declared this medical condition on my application form (pause and signs), but my application was turned down by the company. They told me “You need to show me or give me evidence that you actually have the ability to take the job”. So, I went back to my consultant, I told him the nature of the job and what it would involve, and he wrote a letter to them to explain that my condition would not actually prevent me doing this role. When that obstacle was overcome, I had a job I enjoyed. I was there for eighteen years. What I was determined to do, was to demonstrate to this employer that I carried out my job as well as the next person without a disability. So, I guess that’s the point at which I decided I didn’t want to actually stand out from the crowd because of my disability or mobility limitations.

Debra explained how she got annoyed when she was unable to perform as she wanted to at her job and she worried about her future health:

But I do worry... I do worry about my health in terms of how robust could I be at my work. But I used to do a job where I had to lift patients. So, I always knew I couldn’t do that when I was older or more injured. So, I suppose as I’ve become (older) in my life, I adapted the actual work I do because I would not be able to do this job if I was in pain.

Participants expressed their fear of taking sick leave because they had experienced negative outcomes with past employers or they had been criticised in aspects of their work related to the chronic condition. Andrew described an incident with his manager, that occurred before the CSMD had been diagnosed, that changed his attitude about taking sick leave when in pain:

I think in the beginning, when the AS [ankylosing spondylitis] wasn’t diagnosed, I was in so much pain and I couldn’t walk. I think then I took quite a bit more sick leave than I do now. And, yes, people don’t like that. I remember when I was promoted, they [employers] said to me “if we’d seen your sick-leave record we wouldn’t have promoted you”.

Similarly, Debra, in her experience, explained that sickness absence for a chronic condition is not well tolerated by management teams:

So, you have to keep going to work, you know, you have to keep on. But you have to (pause) you have to make that decision that you're going to carry on regardless. And I think also sickness management is so extreme that its just...now people don't tolerate you being off sick. It's quite a negative thing if you're off sick-even if you've got a long-term condition.

Most participants described how they were motivated to work for more years rather than take early retirement as they either enjoyed their work, felt too young to give up work, or valued the mental challenge offered by work. As Laura explained:

I like working, and I will do it as long as I am well enough to do it and do it well- so you can still have some pride in what you are doing, I want to keep working. But also, you have to be well enough; it is a lot of hours to fill while you are not working and you don't know what to do with yourself. Without the drive, work gives you, without that focus. I think people can become old before their time if they are not careful.

Male participants were well informed about the changes to retirement age and the state pension age that the government planned. They did not feel that they were affected as much as their pension state age was increased only by one year. However, they were not happy with the past changes to pension age, which in their view, were implemented by the government when the country's economy was unstable. As Andrew said:

As I'm getting older, I'm getting more aggravated about it. I was 40 it was first announced that my retirement date was going back to 67. When I first started work, when you spoke to all the pension providers, they were all saying, "we've put your retirement date down as 50 because you'll have made so much money by then you'll be able to retire". Of course, that's not happened. And in the meantime, the government decided that there's not enough money in the pot for 65 to be a general retirement date. So, they moved it.

The female participants were concerned about retirement and were upset and angry about the proposed changes. They felt deceived as the state pension age had increased multiple times in the past years (from 60 to 65 and then to 68) and the choices they made about their future and retirement had been affected. Teresa explained her frustration:

I kind of feel a little bit cheated about it all really. Because, you know, I was part of a generation of nurses that in fact if I'd stayed in the NHS, I could have retired at 55. I went into teaching because of my condition. I couldn't continue doing active ward work. So, you know, coming into teaching has kind of disadvantaged me in that respect.

Some participants felt that the changes to the retirement age would negatively impact the ability of people with chronic conditions to take or enjoy retirement. Those who did not foresee the changes in the retirement age, and could not afford an early retirement, were upset and afraid about their future health and their ability to keep working. Annette described how she had planned her retirement but deaths in her family made her question the government's motivations:

I don't feel very impressed at all [with the pension changes]. Because my mum had MS (multiple sclerosis) and she became very ill with it when she was 54 and never got to retirement age. My dad died at 71, so I am confident that the government is actually hoping that people will snuff it before they have to pay out these days!

Kathryn reflected on the advice she could give to the younger workforce. She believed that people needed to find a work-life balance and prioritise this as, in her opinion, employees were, in general, undervalued and could be easily replaced at work. Her advice was:

Don't become a slave to the company that you're working for. They will kick you out into the street as soon as you are no longer useful to them...Make sure that you look after yourself, that you will be the number one priority because it's a little bit miserable if you retire at 70 and find that you are too ill to do anything.

Others who felt ill-prepared to address the issues raised by the retirement age changes and who felt inadequately informed had not thought about what these changes would affect them and they expressed concerns about their financial future. As Nicky explained:

I can take my teacher's pension earlier. But of course, it's reduced. And I'm looking into it now to see, well how much can I live on. What's that mean? What's the minimum that I can live on and maybe work?

Participants expressed their disagreement, stress and frustration with the extended retirement age as they felt that their health was likely to deteriorate as they got older. Jessica, like other participants, as there was little consideration for health issues at work, she would expend her energy and general strength at work to the detriment of her personal life. As she said:

So the thought that I might have to keep working when it's becoming a physical challenge for you, and it's also the fact you need to keep coming into work (pause), and if they pay you, they have the right to expect you to be in the workplace. Still, it can mean that you've got no health left for anything else outside of work.

Several participants discussed the benefits of staying at work until the age of 67. They explained that work helped them mentally and socially and they intended to try to stay healthy so they could work longer. Laura explained why working is so important to her:

It is the social aspect. I think if I didn't work, I would get bored very quickly and I think I would get old very quickly, because obviously when you're getting up and going to work, you've got a purpose to your day. If I retire early, I would obviously have to then find things to fill up the day and find a purpose and a reason to get out of bed.

The participants generally felt stressed and depressed about the retirement changes and they gave a diversity of reasons for these feelings and shared some of

the struggles they experienced on a day-to-day basis. Some of them discussed their uncertainty about the quality of their future and the progression of their condition. Others blamed external factors, such as, increased workload and the behaviour of co-workers while others blamed the symptoms of their condition and the impact these had on their sense of wellness. As Debra explained:

I could sit, and I could cry if I had to talk about the pain. It's very difficult (pause) I live because I (pause) you can't live (pause) you cannot live your life because of it because you'd do nothing. So, you have to keep going to work, you know, you have to keep on.

Similarly, Nicky expressed her worries and uncertainty about the future:

It [the retirement age] was 60 when I originally joined, then it was 65, and when I changed my job, it got pushed it to 67. And I'm thinking, all the time, how will I keep going for another 12 years? I just don't know; I don't know. It's is a constant worry at the moment because of my back and my hips and all the other injuries I got.

Sarah expressed her worries about finances and that she could not afford to stop work:

I'm a single parent I don't have family very much around, so this means that I need to work as long as I can. It depends on my health, but I need to have an income. At the moment I have a blue badge, but I know the restrictions for what was previously disability allowance are tight now. So yeah it is the financial element of it that worries me more.

Finally, some of the participants reflected on the strategies they had chosen for a healthy retirement and explained that maintaining their health would be their primary plan for a successful retirement. In order to achieve this they sought advice or accessed programmes offered by healthcare professionals they had consulted, for example, an exercise programme prescribed by a physiotherapist or keeping weight management diary they established with a dietician. Some felt that early retirement, with the support of their employers, was a possibility should they began to feel that

their ability to work was becoming compromised by the CMSDs. Maria had already put a plan in action:

So, I will be taking what they call 'phased retirement' which is actually the ideal thing for me. I could go down to 2 days, I can go down one more day before I actually fully retire.

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Chapter 7: Research Methods- Quantitative Phase

7.1 Introduction

This chapter discusses the methods used in the quantitative phase of this exploratory sequential MMR study. A descriptive non-experimental survey approach that adopted a cross-sectional design was selected for this component of the study to provide a snapshot of an ageing workforce with a CMSD in the West Midlands. This chapter explains the choice of an online questionnaire as the data collection tool and discusses key features, strengths and limitations. It describes how the qualitative phase informed the questionnaire development and explains the methods that were used to generate, administer and manage the online questionnaire. The chapter concludes by highlighting the appropriate procedures used to improve the reliability and validity of the questionnaire.

7.2 Survey research methods

A survey research approach was chosen, in combination with the qualitative component, to address the aim and objectives established for this study. Survey research is most commonly used to gather large amounts of data, such as opinions, demographics and preferences (Forister and Blessing 2020). It can use tools to collect data in a relatively inexpensive and fast way (Forister and Blessing 2020:92) and can address one or multiple issues at once (Forister and Blessing 2020:92; Nardi 2015:15). The sample can vary in size, e.g. it can be small and suitable for probability sampling or it can target large populations in order to generalise results (Nardi, 2015:15). However, survey research presents some disadvantages, which cannot always be avoided but can be

minimised. Some of the challenges include issues related to the targeted respondents, such as sample size, IT literacy skills or reading ability and other factors, such as reduced response rates or incorrect responses (Nardi, 2015:15).

Survey research is classified as descriptive, predictive, or explanatory (Johnson 2001:8) and can include the whole population (such as a census) or be restricted to a representative sample of the population of interest (Mathers, Fox, and Hunn 2009). Descriptive survey research does not aim to develop or test an intervention but measures the characteristics of a population or group and/or collects large amounts of data about, for example, opinions, attitudes, expectations, and behaviours across a wide geographical location (Parahoo 2014:167). Survey research is also classified, according to the timescale of the data collection, as longitudinal, cross-sectional or retrospective (Johnson 2001). Given the resource requirements and the time available for the second phase of this MMR study, a descriptive cross-sectional survey approach was selected to systematically collect quantifiable data in a single data-collection period, identify the characteristics and other variables of employees over the age of 50 with a CMSD, and make associations between these variables.

7.3 Questionnaire as a data collection method

The choice of an appropriate survey data collection tool emerges from the research aim and objectives after considering all possible methods, such as examination of documents, questionnaires, observations and interviews (Saunders, Lewis, and Thornhill 2008:362). A questionnaire was selected for this quantitative phase to facilitate the accurate collection of data. Using the

questionnaire, the same questions were asked of each respondent and the data collected were analysed statistically (Parahoo 2014:167). Also, respondents may have felt more confident to provide honest answers since responses were anonymised (Fowler 2014). Questionnaires can be 'interview-administered' where responses are recorded by the interviewer face-to-face or by telephone (see Summary Table 7.1), or else they can be 'self-administered' where they are completed directly by the respondents and returned to the researcher by post or online (Mathers, Fox, and Hunn 2009) (see Summary Table 7.2).

The research aim and objectives and factors, such as, the type and the number of questions developed, the population characteristics and the role of the researcher influence the choice of a self-administered questionnaire (Saunders, Lewis, and Thornhill 2007; Hunter 2012) Moreover, careful consideration of the strengths and weaknesses of different administration approaches used for self-administered questionnaires resulted in an online format being chosen. The online questionnaire enabled access to virtual communities of people who shared specific interests, attitudes, and beliefs about working with CMSDs. The online approach facilitated the advertisement process using links to e-mails and social media, and online forums. It also provided an inexpensive method of collecting data from a large number of people, over a wide geographical area, and in a relatively short period of time (Bird 2009).

Table 7.1: Interview-administered advantages and disadvantages (Saunders, Lewis, and Thornhill 2008:364, Hunter 2012)

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Table 7.2: Self-administered advantages and disadvantages (Saunders, Lewis, and Thornhill 2008:364, Hunter 2012)
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7.4 Questionnaire development

Designing the questionnaire was a complex and time-consuming procedure and involved several phases. The generated questions required respondents to accurately answer a series of items or statements (Jones and Rattray 2015). The questions needed to be unambiguous and address key concepts that emerged from the qualitative component or were detailed in the study objectives. In a personal online conversation on Research Gate (2019), David Morgan⁹ explained to me that “the problem [with exploratory sequential designs] is that not much has been written that explicitly deals with procedures for how to convert [qualitative] themes and categories into operational survey research. Apparently, people assume that it is simple and straightforward”. Therefore, I decided to use Johnson and Christensen’s (2020:209) guidance for the questionnaire construction.

Rigorously designed questionnaires can collect useful quality data that may lead to clear conclusions or recommendations (Jones and Rattray 2015). Johnson and Christensen (2020:209) developed fifteen principles that guided the construction of this questionnaire (Table 7.3) and facilitated the transformation of the qualitative data into questions. Some of the principles offer guidance and formatting recommendations, whereas others provide a more detailed description of how questions can be developed. This section discusses how the 15 principles directed the development of the questionnaire in this study. This process is separated into clear phases that are described below.

⁹ David Morgan is an emeritus professor at the Department of Sociology, Portland State University. He is an expert in qualitative and MMR and has written over 70 research articles and 2 books, including the ‘Integrating Qualitative and Quantitative Methods: A Pragmatic Approach’

Table 7.3: Principles of Questionnaire Construction (Johnson and Christensen, 2020:210)

Principle 1	Make sure the questionnaire items match your research objectives
Principle 2	Understand your research participants
Principle 3	Use natural and familiar language
Principle 4	Write items that are clear, precise, and relatively short
Principle 5	Do not use “leading” or “loaded” questions
Principle 6	Avoid double-barrelled questions
Principle 7	Avoid double negatives
Principle 8	Determine whether an open-ended or a closed-ended question is needed
Principle 9	Use mutually exclusive and exhaustive response categories for closed-ended questions
Principle 10	Consider the different types of response categories available for closed-ended questionnaire items
Principle 11	Use multiple items to measure abstract constructs
Principle 12	Consider using multiple methods when measuring abstract constructs
Principle 13	Use caution if you reverse the wording in some of the items to prevent response sets in multi-item scales
Principle 14	Develop a questionnaire that is properly organised and easy for the participant to use
Principle 15	Always pilot test your questionnaire

7.5 Identifying the content

A scoping literature search was conducted in 2016 to identify established and validated questionnaires that could be used or adapted in the survey phase

of this MMR study. Two questionnaires: the Health and Employment After Fifty (Palmer et al. 2015) and the Nordic Musculoskeletal Questionnaire (Crawford 2007) examined the impact of general health on employment; however, they primarily focused on the prevalence of MSK issues or compared the impact of MSK problems on specific areas of the body. Neither questionnaire specifically addressed issues related to managing CMSDs in the workplace and the strategies used by employees. It was, therefore, necessary to develop a questionnaire that specifically addressed how an ageing workforce managed CMSDs in the workplace.

It is essential to use both primary and secondary resources when developing a new tool. No previous survey research had been conducted on this specific topic thus it was necessary to *“build on the expertise and experience of others”* (Fetters, Curry, and Creswell 2013:2140). Primary resources involved experts in the field, colleagues, and members of the target respondent group, i.e. employees over 50 who had a CMSD. I solicited information through social media (e.g. Twitter) from academics and health professionals with expertise in MSDs and occupational health. Then I posted a short explanatory paragraph in different occupational health forums (e.g. Occupational Medicine Society, and the Chartered Society of Physiotherapy Interest Group for Occupational Health) asking for interested individuals to contact me. Five volunteers expressed an interest in assisting me and participated in a 30-minute online conference call to discuss key issues and themes related to the management of CMSDs in the workplace.

In addition, secondary information was obtained by reviewing articles, conference proceedings and previous study findings to ensure the validity of the

questions included in the questionnaire (Mathers, Fox, and Hunn 2009). Secondary resources included a systematic review and a qualitative research review that I conducted before I began data collection. These reviews highlighted issues concerning the management of CMSDs and strategies that employees could use to fulfil their roles and responsibilities in the workplace. These topics facilitated the development of response items for the online questionnaire. I also contacted the authors of the Health and Employment After Fifty study (Palmer et al. 2015) and obtained permission from them to use and adapt their questions 12, 74 and 83 before I incorporated them in the questionnaire. I also reviewed some relevant scholarly articles for information and guidance to support the questionnaire development.

The data and findings obtained from the semi-structured interviews, conducted in the qualitative phase of this study, made a significant contribution to the questionnaire development. A more detailed explanation of this contribution can be found in Chapter 9. Morgan (2014a:108-110) explains that qualitative data can be used in three ways to inform a questionnaire design in MMR: (a) The 'discovery-oriented use' focuses on topics that connect the participants with the subject of interest and reveal information about it, (b) the 'developmental use' examines and explores pre-defined issues to enhance understanding, whereas (c) the 'definition-oriented use' provides specific information to support questionnaire construction and content. The categories and themes that represented the qualitative component data and findings contributed rich information and reflected the developmental use of qualitative data and findings, described by Creswell and Plano Clark (2017:87) as: *"grounded in the culture and perspectives of [the] participant"*. I used this

information to develop questions that were relevant and significant to an ageing workforce. Developing questions that would be meaningful to the selected sample group increased the validity of the questionnaire.

Furthermore, data obtained from the semi-structured interviews reflected participants' personal use of language and assisted me in avoiding using technical terms and professional jargon. For example, participants used phrases such as "feeling sad", "feeling guilty", "hopeless", and "just wanted to cry". I interpreted these phrases as reflecting the umbrella term of depression. I consulted a validated list of terms (Kelly et al. 2011) derived from the authors' assessment of academic and clinical descriptions of depression and also patient-reported symptoms of depression. In this way, I used several relevant sources in developing questions for this topic area.

As recommended in the 5th principle (Table 7.3), the questions developed were straightforward and not emotionally loaded. The qualitative interview data enabled me to clarify specific question items and also provided examples that were included as question items. Also, the words and phrases used in developing the questions were familiar to the respondents and, in this way, I hoped to encourage honest and truthful responses. For example, I formatted an item as "I feel frustrated when I cannot perform well at my job" as the word "frustrated" was used by the participants in the qualitative phase.

7.6 Creating the questions

It was crucial to determine the most appropriate type of question for each topic (Johnson and Christensen 2020:210). Closed questions offered a predetermined response (e.g. yes or no) or a list of acceptable response items

from which respondents' could choose the one most relevant to them (Schofield and Forrester-Knauss 2013). These response items were identified from the primary and secondary resources described above (Kelley et al. 2003). Ruel, Wagner and Gillespie (2016: 44-78) also explained that the choice of closed questions produces data that can be quantified (e.g. completely disagree: 1, disagree: 2 etc.) and transferred into statistical software, such as the Statistical Product and Service Solutions (SPSS) to be analysed and subsequently presented in the form of tables, charts, and graphs. In this way, the purpose of conducting the survey research component of the study, which was to collect and statistically analyse quantifiable data could be addressed.

The questions developed used a variety of forms, e.g. checklist, multiple-choice, Likert scales, alternative statements or rating scales (Stone 1993:1265). For example, in the qualitative phase, participants described various strategies that they used in the workplace to manage a CMSD. The items generated for questions that focused on management strategies utilised this narrative data, e.g. the eight items developed for Question 19: How effective did you find the strategies offered by your employers to manage your condition at the workplace? Lastly, the questionnaire invited respondents to answer in their own words if they selected the "other" response.

O'Cathain and Thomas (2004) suggest four types of 'open-ended questions' (extension, expansion, substitution and general) that can be used in a questionnaire. They can be used as stand-alone questions, or they can be used to offer a response option within a pre-defined list of items. The 'extension' type is used to cover all possible relevant answers and asks the respondents to type a different answer if they wish at the end of a list of items: "If you selected

[the item] Other, please specify” e.g. see Question 23 (O’Cathain and Thomas 2004). Extension type items were used at the end of six questions in my questionnaire to allow respondents to add a response to an established list. These questions were optional and, as only a few respondents provided further information, they were not included in the analysis process.

The ‘expansion’ type follows a closed question with the additional sub-question ‘why’ or ‘how’ or request for further information - ‘please explain your response’ to solicit additional information about the response given. For example, Question 35 “Do you expect to carry out the same type of work until you retire?” Expansion and extension questions are frequently used in survey research and are considered good practice (O’Cathain and Thomas 2004). O’Cathain and Thomas (2004) also explained that a general open question requesting more information, typically formatted as ‘Is there anything else you would like to add?’ represents the end of the questionnaire and invites respondents to potentially support some of their responses or discuss their overall experience of the survey topic. This type of optional generic question was used at the end of the questionnaire. The pilot test respondents positively appraised this question as they felt that it enabled them to comment on, or highlight, topics that had not been identified in the questionnaire.

However, O’Cathain and Thomas (2004) suggest that these responses are difficult to include in the quantitative analysis and require a thematic approach. In reality, this type of generic question rarely generates new information or raises new issues. This proved to be my own experience during the analysis process, and the narrative responses were not formally analysed. However, the subjective comments were, interestingly, reflective of the

qualitative data obtained in the qualitative component of the study. The authors also suggest that the 'substitution' type of open-ended question is only valuable if the researcher wishes to explore how people think about a sensitive or poorly defined topic. This requires an actual open-ended question, and qualitative techniques are applied to analyse the responses (O'Cathain and Thomas 2004). This type of question was not used in our questionnaire as unknown, complex or sensitive topics had already been explored and discussed in the qualitative component of the study.

7.7 Questionnaire Structure

The first two sections of the questionnaire (see Appendix 7.1) focused on personal data and employee demographics. These were multiple-choice questions soliciting a single limiting response, for example, gender, age or occupation or multiple answers from a predetermined list of options 'that apply' to the respondent. The next question (rating type) focused on current ability to work where respondents had to choose a single best response from a scale from zero to ten. The following five sections included mostly Likert-scale or matrix-type questions. These questions gave respondents a range of options from which to select a response; for example, a 5-point scale from 'not at all effective' to 'extremely effective'. I avoided using questions that combined two or more topics in the same question or involved a double negative as they can be confusing for respondents (Lavrakas 2008:211). For example, instead of asking "Do you agree or disagree with the following statements" the question was formatted as a rating scale with the instruction: "Please indicate the degree of agreement with the statements below". Other questions included statements

with response options that indicated 'how satisfied' respondents felt with the statements.

In the Likert-type scale responses, a neutral reply (5-point scale) was used. There is no definitive evidence for the value or not of a neutral response, as it depends on the person who responds and the type of question being asked (Kulas and Stachowski 2013). However, a few issues may arise from including a midpoint as respondents can be reluctant to definitively voice their opinion, or they may choose the 'safe' response (Garland 1991). Also, respondents tend to overthink or respond superficially when asked to report their attitude or in relation to sensitive topics (Krosnick et al. 2002). Therefore, researchers should carefully consider the aim of survey research and the purpose of the questionnaire being developed before using a neutral response (DeMars and Erwin 2004). Midpoint options do not affect equally the data generated from a questionnaire (DeMars and Erwin 2004), and people tend to be more honest when responding to a self-reported questionnaire (Garland 1991).

To facilitate respondents completing the questionnaire, questions were grouped into six sections. The order selected placed the generic and easy to answer questions at the beginning of the questionnaire and more complex ones toward the middle or end (Ruel, Wagner, and Gillespie 2016:33). It has been suggested that demographic questions should be placed at the end of a questionnaire with the introduction: "To finish this questionnaire, we have a few questions about you" (Johnson and Christensen 2020:226) as they are not considered interesting to the respondents (Ruel, Wagner, and Gillespie 2016:33). In the pilot test, these questions were placed at the end of the

questionnaire. The pilot test respondents commented that they found it boring to do these questions at the end and felt that in a 'real' situation they might have failed to answer them or not completed the questionnaire. Based on this feedback, the demographic section was moved to the beginning and remained there after the questionnaire was re-tested.

Finally, the length of the questionnaire and the time required to complete are issues that require careful consideration. Schofield and Forrester-Knauss (2013:209) suggested that a questionnaire should take around 20 minutes to complete. Longer response times are associated with incomplete questionnaires and a decline in response rates (Schofield and Forrester-Knauss 2013:209). Malhotra (2008) investigated the relationship between the time it takes to complete a questionnaire and the quality of the data produced. He identified that respondents did not continue completing the questionnaire after 31.4 minutes. In the context of an online questionnaire, respondents could easily give up and close their internet browser (Rea and Parker 2014). To address this issue, while including questions considered important to the study, the questionnaire was pilot tested several times before being administered. The final questionnaire consisted of 36 questions and the completion time of the final version was approximately 20-25 minutes. This length of time was considered appropriate in terms of being feasible for potentially busy respondents and encouraging them to respond.

7.8 Online Survey Tool

The final questionnaire was distributed as an online self-administered

tool (Mathers, Fox, and Hunn 2009) using the 'Online Surveys'¹⁰ software package. This online survey tool was designed for academic research, education and public sector organisations and was recommended by the Coventry University Research Resources Department as appropriate to design and administer the questionnaire. As the primary researcher, I selected this software to assist in constructing the questionnaire after considering a variety of other available software tools (e.g. SurveyMonkey, Qualtrics, Google Forms, QuestionPro and WebSurveyor). The Online Surveys tool is fully compliant with UK data protection laws and the General Data Protection Regulations (Regulation EU 2016/679). An internet link directed respondents to the website that hosted the questionnaire. They could then read more about the project, give consent to participate, and respond to the questions. Respondents could use any electronic device (laptop, tablets, mobile phones) to access and complete the questionnaire and to immediately 'return' it (Regmi et al. 2016).

The target group for this study was people over the age of 50, thus it was possible that a few potential respondents would have limited digital literacy and have found an online questionnaire challenging to complete. However, recent reports (Minocha, McNulty, and Evans 2015; Davidson 2018) have highlighted that the majority of people who have not used internet-based services in paid employment or learned digital skills as a part of their formal education are those over the age of 65. Only 2% of respondents in this survey research component of the study were over the age of 65, suggesting that a very small minority of the respondents would have found the questionnaire challenging to complete.

¹⁰ The software can be found at: <https://www.onlinesurveys.ac.uk/>

7.9 Sampling

At the beginning of the qualitative phase, I described the inclusion criteria used to identify an appropriate sample with the desirable characteristics for both phases of this MMR. I followed a pragmatic approach to sample selection, guided by the definitions of Johnson and Christensen (2020:299) and (Bryman 2016:187). In this study, it was not possible to identify those employees who had a CMSD and were over the age of 50. Thus, a non-probability sampling technique was selected to locate older employees with a CMSD in the West Midlands. There are four types of non-probability sampling to consider: quota, convenience, snowball and purposive sampling (Table 7.4) (Johnson and Christensen 2020:253 and Bryman 2016:187). A purposive sampling approach was chosen as the most appropriate type as I wanted to access a cross-section of the identified population and randomisation, as strategy, was not possible. As Lavrakas and Battaglia (2008:525) explain: *“purposive sampling is appropriate for the selection of small samples, from a limited geographic area or from a defined but restricted population where inference to the population is not the highest priority”*.

7.10 Response Rates

The response rate (RR) is used as a tool in survey research to calculate and understand the degree of success in obtaining completed questionnaires from a selected sample (Lavrakas 2008). The RR is important as it ensures that the results are representative of the target sample and that the questionnaire is effective as a tool collection tool.

Table 7.4: Non-random sampling techniques (Adapted from Bryman 2016:187 and Johnson and Christensen 2020:253)

Quota sampling	The researcher decides on the number of certain types of people to include in the study according to their ethnicity, gender or other similar characteristics
Convenience sampling	The sample is available and accessible to the researcher and can be quickly recruited and they are willing to participate in the research study
Snowball sampling	Participants identify other participants that may be suitable and willing to take part in the study
Purposive sampling	The inclusion criteria are defined by the researcher who then focuses on recruiting individuals who meet the established criteria

A low RR can potentially impact the data analysis, the validity of the study and the study findings (Pielsticker and Hiebl 2020; Kelley et al. 2003; Baruch and Holtom 2008). A response rate is measured by the number of respondents divided by the number of eligible subjects who received a questionnaire (The American Association for Public Opinion Research 2016:42; Fowler 2014:60). In general, a RR of 80% or more is required to establish scientific validity (The American Association for Public Opinion Research 2016). However, an RR of 80% is rarely achieved and considering RR in isolation may not be sufficient to judge the validity and quality of a study (Morton et al. 2012; Mellahi and Harris 2016). Some authors suggest that there is no agreed minimum RR and explain that each discipline usually states the minimum accepted RR as a guide for academics and researchers (Mellahi and Harris 2016; Fowler 2014).

A decline in RRs in published research is evident over the past two decades (Morton et al. 2012; Mellahi and Harris 2016). Although there is the assumption that a lower response rate automatically lowers the validity of a study (Harrison and Draugalis 1997; Fincham 2008; Fowler 2014:61), several

studies have demonstrated that there is no direct correlation between validity and a low or no RR (Mealing et al. 2010; Holbrook, Krosnick, and Pfent 2007; Morton et al. 2012; Mellahi and Harris 2016) but they maintain that RR remains important to indicate the risk of bias (Mealing et al. 2010; Morton et al. 2012; Mellahi and Harris 2016). Different reasons for low or non-response rates have been identified, for example, refusal or ineligibility to respond, inability to locate respondent, busy lifestyles, mistrust towards the researcher, or return of empty or spoiled questionnaires (Saunders and Lewis 2018; Boslaugh 2008; Morton et al. 2012). Although multiple strategies are often employed to increase participation rates, and therefore response rates, only some of these can be controlled by the researcher (Saunders and Lewis 2018; Boslaugh 2008; Morton et al. 2012). When a purposive sampling approach, as in this study, is used, the calculation of the RR has no meaning because there are no known probabilities of selection (Lavrakas and Battaglia 2008). The purpose of this MMR study was exploratory, and the research did not aim to generalise conclusions to a larger population. Therefore, it was considered important that a detailed explanation of the sampling and recruitment procedures and the strategies used to improve participation was provided (Cook, Heath, and Thompson 2000; Morton et al. 2012).

7.11 Ethical considerations

This study was granted ethical approval by the Ethics Committee of Coventry University (P89732) (see Appendix 4.3). The questionnaire cover page included an invitation message summarising the purpose of the research and outlining how confidentiality of the data and respondent anonymity was protected. It also provided the contact details of the lead researcher and the

Director of Studies should respondents have questions or concerns about the study. The Online Surveys software assists researchers to comply with data protection legislation and the respondents were not required to provide any personal information. The data we

re stored on the researcher's personal, encrypted and password protected iCloud One drive. Coventry University is declared as a data controller for the information provided according to the General Data Protection Regulation and the Data Protection Act 2018. Lastly, the study data will be destroyed two years after the completion of the project.

7.12 Questionnaire administration

The survey research component of the study used a purposive sampling approach. As a result, the companies and organisations selected for the distribution of the questionnaire were the same as the ones involved in the qualitative phase. The administration of the questionnaire was conducted in three phases. The first phase started on the second Wednesday of June 2019 at 10:00 a.m. when I distributed the link to large and medium-sized companies around West Midlands. Faught, Whitten, and Green (2004) explored the best timing for sending an online questionnaire and identified that Wednesday morning provided better results and increased response rates. In order to access the employees of each organisation or department, I identified a key contact person – the gatekeeper – to assist in distributing the questionnaire. These were the same individuals that I identified in the qualitative phase of this MMR. However, to ensure that they were still employed in the same position, I sent an initial e-mail to them querying if they were still happy to participate in the

second phase of the study and to circulate an e-mail internally with additional information about the study.

A follow-up e-mail was then sent to them with an information leaflet and an A4 poster advertisement (see Appendix 7.2) that included a QR-code and a website link to enable potential respondents to access the online questionnaire. I used a web address shortener called 'Bitly' to make the weblink more attractive and to reduce its length for the Online Survey software. Employees received a standardised e-mail that stated the purpose of the survey component, details of the research team conducting it and the estimated time required to complete the questionnaire. The email also contained the web address of the questionnaire, the ethics approval number, and additional contact information. Gatekeepers could also print out an information poster to post in their organisation's common room.

Moreover, I distributed the same leaflet and electronic poster via e-mail to several GP surgeries in West Midlands, requesting that it be posted on their announcement board. I also posted the questionnaire link on the Coventry University Physiotherapy Blog and copied and pasted it to the social media accounts (e.g. Twitter, LinkedIn, Facebook) of the selected companies in West Midlands. I also circulated the same documents through my social media account which other researchers and colleagues could then share with their contacts. To encourage a response, a pre-questionnaire notification was posted (Burke and Hodgins 2015) on social media and by collaborating organisations one week before the questionnaire went live online. This notification alerted potential respondents to the questionnaire and 'primed' individuals to respond.

To increase the number of completed questionnaires a follow-up message was sent two weeks later, on the same day of the week and at the same time. Public support and publicity can help to raise awareness of questionnaires therefore I used workplace newsletters, social media and online blogs to advertise and disseminate the questionnaire (Oppenheim 1992). At that point, 30 questionnaires had been returned. Unfortunately, many of the companies who, at an earlier stage, had agreed to participate responded negatively to the follow-up e-mail, not only refusing to circulate the e-mail again but informing me that they had suspended distribution of the questionnaire. Their rationale was that they had accessed the questionnaire and they felt that responses to the questions could suggest that their organisations were 'bad' employers. I had provided an earlier detailed explanation of the nature of the demographic and employment data to be collected and the strategies used to ensure data confidentiality. Still, it proved impossible to overcome their concerns and I was unable to send a follow up e-mail to potential respondents through the gatekeepers in these organisations.

This necessitated me exploring other ways of advertising the study and distributing the questionnaire. I created an advertisement which I paid to be placed in the print and online copies of the local newspaper, the 'Coventry Observer'. Also, I identified and contacted a number of closed online groups on social media related to musculoskeletal conditions, such as 'Mums with Rheumatoid Arthritis' and the community page for 'Long-term back pain'. In my message, I explained the study purpose to the administrators of each online group and asked for permission to inform and invite the members of the group through a public post. I shared the questionnaire on social media; the front page

of the questionnaire provided explicit instructions and an explanation of the strategies used to ensure the anonymity of the respondents and data confidentiality. Potential respondents were advised to express their opinions honestly, to reflect on their answers, and complete the questionnaire in their own time. In total, 15 groups allowed me to advertise the questionnaire through their websites.

A second follow-up message was sent after two weeks. During those two weeks, I decided to send the study information leaflet, the poster and a covering letter by post to 40 different companies in the West Midlands as e-mail addresses were not available. The letters were addressed to the Director or the Reporting Manager of the selected company. In the letter, these individuals were asked to post the study poster in the company's common room and on the announcement board. Almost a month later (middle of August 2019) I received responses from a few of these companies. Eighteen company representatives responded explaining that they could not do as requested as their headquarters were in London. Twenty-four companies said they would post the information as requested and asked for an electronic copy to be also sent by e-mail. The remaining companies did not reply. At this point, I had received 68 completed questionnaires.

As a final effort to disseminate the questionnaire, I decided to advertise the study for a further 3 weeks through a paid Facebook advertisement. The advertisement was cleverly designed to target only those who lived and worked in the West Midlands, were over the age of 50 and showed interest in health-related online pages. The advertisement included the poster, an invitation message and a link to the Coventry University physiotherapy blog webpage

where they could read more about the study. The advertisement appeared every 2 days on the right-hand side of the screen and was discontinued after 3 weeks. At the end of the third week, I closed the online survey link to all potential respondents. At that stage, I had received 107 completed questionnaires and 5 respondents had been screened out as not meeting the inclusion criteria

7.13 Integration in this MMR study at the methods level

In this exploratory sequential design, qualitative data were, in part, collected and analysed in order to inform the survey research component (Creswell and Plano-Clark 2011). Fetters, Curry, and Creswell (2013) highlighted that integration could occur by linking the data collection methods and analysing the two phases of an MMR project. Integration occurred at the methods level through what Fetters, Curry, and Creswell (2013) defined as the 'building' approach. The questionnaire content was developed by incorporating the qualitative data, analysis of which produced ideas, concepts or identified familiar language used by the interview participants. In this way, the qualitative findings (themes and categories) were linked to specific elements of the questionnaire. In addition, the phrases that participants used during the interviews informed the wording of individual questions.

This process was illustrated in McCrudden and McTigue's (2018) MMR study in which they used an explanatory sequential design. In accordance with the building approach to integration, they used the quantitative data to create the topic guide for the subsequent qualitative interviews, enabling a more in-depth exploration of the quantitative findings (McCrudden and McTigue 2018).

Similarly, Haggerty et al. (2012) conducted an exploratory sequential design study by mapping the qualitative dimensions of care continuity to a standardised questionnaire and developing a joint display to support integration.

In this study participants' data quotes and the main findings from the qualitative component formed the basis of the questionnaire questions and Appendix 7.3). This process of mapping the qualitative findings with the survey questions (see Table 7.5) enriched and increased the relevance of the final questionnaire in a way that would not have been achieved solely by using the literature. The final questionnaire in this study consisted of 36 questions designed to comprehensively explore the management of CMSDs in the workplace by an ageing workforce in West Midlands. Three questions were adapted from the Health and Employment After Fifty (Palmer et al. 2015) in the creation of questions 16, 29 and 32. Demographics and employment questions were included to provide respondent profile information. Some questions were identified from secondary data and finalised after consulting experts and colleagues (Questions: 17,18,24,25,27,34,35).

Table 7.5: Mapping qualitative findings with survey questions

Main themes and categories	Question No.
Impact on wellness <ul style="list-style-type: none"> • Work performance • Physical issues • Mental stressors • Personal life changes 	Q16: How important it is for you to perform well in these different aspects of your life? Q17: Assume that your work ability at its best has a value of 10 points. Q18: How many points would you give your current work ability? Q19: How much did your condition interfere with your ability to work in the last 6 months?
Strategies and facilitators that support managing a CSMD	Q21: Who at work do you mostly talk about your condition?

<ul style="list-style-type: none"> • Taking a healthy approach • Strategies offered at work • Supportive environment • Managing the condition outside the workplace 	<p>Q22: How often do you get support at work from the following individuals?</p> <p>Q23: What strategies have you been offered in the workplace to help you manage your condition?</p> <p>Q24: How important are these strategies in helping you manage your condition?</p> <p>Q25: How do you manage your CMSD at the workplace?</p> <p>Q26: Have you ever used any of the following strategies to help you manage your condition?</p> <p>Q27: How important are these strategies for the management of your condition?</p> <p>Q34: The Retirement age and the State Pension Age has changed for both men and women. Although there is no longer a law that states that you have to retire at a certain age, the Government is planning further increases of the State Pension Age from 66 to 68 years. Please indicate how much you agree with the statements below.</p>
<p>Thoughts and emotions on future retirement and employment</p> <ul style="list-style-type: none"> • Fear on employment • Motivation to work longer • Concerns on retirement changes • Frustration with the employment and retirement 	<p>Q31: We would like to know your thoughts about some factors that can affect how you manage your condition at work. Please indicate the degree of agreement with the statements below.</p> <p>Q32: Similarly, please indicate how often the following occur.</p> <p>Q34: The Retirement age and the State Pension Age has changed for both men and women. Although there is no longer a law that states that you have to retire at a certain age, the Government is planning further increases of the State Pension Age from 66 to 68 years. Please indicate how much you agree with the statements below.</p> <p>Q35: Do you expect to carry out the same type of work until you retire</p>
<p>Employees' approach to living with a CMSD</p> <ul style="list-style-type: none"> • Work ethic • Attitudes on management strategies • Take responsibility for self-management • Disclosing the condition 	<p>Q24: How important are these strategies in helping you manage your condition?</p> <p>Q25: How do you manage your CMSD at the workplace?</p> <p>Q26: Have you ever used any of the following strategies to help you manage your condition?</p> <p>Q27: How important are these strategies for the management of your condition?</p> <p>Q28: How important are these strategies for the management of your condition?</p> <p>Q29: We would like to know how satisfied you are with the support you get at work. Please indicate the degree of agreement with the statements below</p> <p>Q31: We would like to know your thoughts about some factors that can affect how you manage your condition at work. Please indicate the degree of agreement with the statements below.</p>

	<p>Q32: Similarly, please indicate how often the following occur.</p> <p>Q33: Please indicate how much you agree with the statements below.</p>
<p>Perceived barriers related to management</p> <ul style="list-style-type: none"> • Workstation design and environment • Bureaucracy and procedures • Unsupportive Colleagues' • Healthcare System • Barriers with the management team 	<p>Q29: We would like to know how satisfied you are with the support you get at work. Please indicate the degree of agreement with the statements below</p> <p>Q31: We would like to know your thoughts about some factors that can affect how you manage your condition at work. Please indicate the degree of agreement with the statements below.</p> <p>Q32: Similarly, please indicate how often the following occur.</p> <p>Q33: Please indicate how much you agree with the statements below.</p>

7.14 Enhancing questionnaire validity and reliability

The concepts of reliability and validity are related to the quality and usefulness of a questionnaire (Bolarinwa 2015). Each question measures a particular variable and answers depict respondents' reality or understanding of the topic of interest. Well-designed questions enhance the relationship between the responses recorded and what the researcher is trying to measure (Fowler 2014:75). Thus stable questions designed with precision can provide an accurate measure (Ruel, Wagner, and Gillespie 2016:74). Any concerns about reliability and validity demonstrate a potential source of error.

7.14.1 Types of error in survey research

Self-administered questionnaires are associated with two potential sources of error: random error and systematic error (Ruel, Wagner, and Gillespie 2016:73). Random error happens by chance and relates to the sample

variance and the disparity of its characteristics (Fowler 2014:9; Blair, Czaja, and Blair 2013:11). Those who respond to the questionnaire reflect a small number of the population; thus the respondents might not mirror precisely the characteristics of the whole population (Fowler 2014; Blair, Czaja, and Blair 2013). Random error can also refer to the questionnaire construction, for example, an unclear or ambiguous question may lead to a random response. Respondents may not know how to answer a question appropriately and can accidentally choose a response due to poor question-wording. Random error also relates to the way the questionnaire is administered, especially when an interviewer is involved (Viswanathan 2005).

On the other hand, a systematic error can refer to bias in both the sample and the questionnaire responses (Blair, Czaja, and Blair 2013). In sample bias, respondents are different from the target population in some systematic way (Fowler 2014; Blair, Czaja, and Blair 2013), for example, when the sample is disproportional or the researcher has excluded on purpose a part of the population. Similarly, questionnaire bias is associated with how relevant the questionnaire is and how accurate the inferences are that can be made from it. For example, if respondents know very little about the topic, they may not provide a suitable response (Oppenheim 1992:15; Ruel, Wagner, and Gillespie 2016:74).

7.14.2 Reliability and the use of pilot testing

Reliability is related to the scores obtained from measurement instruments (Salkind 2010). Schofield and Forrester-Knauss (2013:210) defined reliability as *“the extent to which a measurement instrument is dependable,*

stable and consistent when repeated under identical conditions". In survey research reliability requires the use of a standardised information collection instrument (questionnaire) which should be consistent from individual to individual surveyed, across settings and at different times (Salkind 2010; Fowler 2014). It is closely linked with the concept of random error as the questionnaire should demonstrate consistency in both the manner it is constructed and the way it is administered (Oppenheim 1992:159).

Three forms of reliability are commonly identified by which the quality or rigor of a questionnaire or measurement tool can be assessed: test-retest, internal consistency (split-half) and alternate-form (Litwin 1995:5; Basham, Jordan, and Hoefer 2010:57). Test-retest reliability assesses how consistent and similar the results are after repeated administrations (Basham, Jordan, and Hoefer 2010:57). For example, if the questionnaire is administered a second time, and the responses from the same person are stable, then the instrument can be considered reliable (Basham, Jordan, and Hoefer 2010:57). Internal consistency evaluates a measure by comparing answers within the items of questions using statistical methods e.g. Cronbach's alpha (Nardi 2015:66). On the other hand, alternate form reliability evaluates the consistency of two different versions of the same tool or questionnaire (Ruel, Wagner, and Gillespie 2016:82).

I described earlier the efforts I made in constructing the questionnaire to ensure its reliability. Using a questionnaire which consists of standardised questions that all respondents receive helps to ensure that the questions are interpreted as the researcher intended. In that way, different responses emerge due to individual differences and not due to flaws in the way the questionnaire

items were constructed. A small sample of the respondent target group helped to enhance the reliability of the questionnaire through pilot testing. They provided information about the wording of the questions and reviewing their responses enabled me to ensure that the meaning of the questions was stable and interpreted consistently by the respondents (Christensen, Johnson, and Turner 2014:336). Two participants, who met the inclusion criteria, reviewed the questionnaire by using the “think-aloud technique” (Johnson and Christensen 2020:229). This technique requires participants to verbalise their thoughts to the researcher while answering the questions. I wrote notes as the participants verbalised their thoughts about the questionnaire, and I was able to answer any queries they had, in particular, if they were unclear about the task.

The respondents also attended a debriefing session, where I invited suggestions and comments, and we discussed their experience. The respondents appeared to interpret the questions correctly and provided feedback about ambiguous items. For example, a respondent highlighted that the issue of mental health was not clearly identified in the questionnaire and he suggested that the questions related to depression, stress and anxiety should be better worded using familiar words. Furthermore, three respondents were asked to complete the same questionnaire after two weeks under the same conditions, using the same electronic device to assess test-retest reliability (Bolarinwa 2015). The period of two weeks is long enough for respondents to have forgotten their responses but not long enough for a change to occur concerning their MSK condition and the support they got from their employer (Deniz and Alsaffar 2013). Respondents provided accurate responses the

second time with few variations on the degree of agreement (2 changed their answers from “strongly agree” to “agree” in one item).

In the final stage, I sent the questionnaire via e-mail to a small sample (10 people) of the defined target group and asked them to provide written feedback on completion times, revised format and content. The sample included volunteers, who had expressed an interest in participating in the qualitative phase of the study but who were not recruited for the interviews. At that time, I asked them if I could contact them and solicit their help in pilot testing the questionnaire. When contacted again, they all agreed to be involved. Some respondents identified elements of the questionnaire that were unclear and suggested changes, e.g. one respondent argued that the items for the question “what strategies you have been offered in the workplace...?” should precisely reflect the items for the following question “how effective were the strategies...?”. One respondent tried a combination of devices (phones, laptops, iPads), different browsers, and monitor sizes to assess the accessibility of the questionnaire and provided me with useful feedback. After the eighth review, there was full agreement on the content and format of the online questionnaire. Finally, three pilot test respondents assessed how long it took them to complete the questionnaire. Their completion time varied between 20 to 25 minutes.

7.14.3 Validity and the involvement of experts

Validity in survey research refers to the extent that the questionnaire addresses all essential aspects of the topic of interest and the questions are clearly related to the study objectives (Johnson and Christensen 2020:134, Ruel, Wagner, and Gillespie 2016:87). It suggests that “a piece of research is

relevant, that it is worth doing, or that its results are valuable” (Sim and Arnell 1993). Validity is commonly undermined by systematic error due to issues and potential flaws in the research design or execution of the study (Sim and Arnell 1993), for example, errors created within the questionnaire design. A systematic error occurs when *“the data from a question are biased in a “systematic” or pervasive fashion, typically due to some underlying flaw in the research design that colours all of the data collected. Systematic errors thus affect the validity of a measurement because they cast doubt on whether the data collected are a true reflection of the phenomenon you wish to describe”* (Ruel, Wagner, and Gillespie 2016:78).

In survey research, there are four main types of validity: criterion, construct, face and content validity. Criterion validity measures how well one instrument correlates or predicts an outcome compared to another measure, which is usually the “gold standard” (Taherdoost 2016). Construct validity shows how well the questionnaire links with the theoretical assumptions and the empirical relationships which emerge from that theory (Oppenheim 1992:162; Sim and Arnell 1993; Sim and Wright 2000). Then hypotheses linked to the theory are constructed, and relationships are examined for positive or negative correlations (Ruel, Wagner, and Gillespie 2016:92). These two types of validity are important when evaluating a measurement instrument. However, this study’s questionnaire aimed to explore complex phenomena and was not used as a measurement tool.

On the other hand, face validity uses subjective methods to assess if the measure ‘appears’ to be doing what it is supposed to do (Sim and Arnell 1993; Ruel, Wagner, and Gillespie 2016:88). A questionnaire has face validity if, for

instance, the content looks relevant and unambiguous and the presentation is clear (Taherdoost 2016). I showed the questionnaire to two PhD students in the Department of Health and Life Sciences before the pilot test was conducted and they provided me with oral feedback about the content of the questionnaire and its presentation. As described in the previous section the pilot test respondents also provided relevant feedback to support face validity. As Ruel, Wagner, and Gillespie explain (2016:88), face validity is, in reality, a rather weak and superficial assessment of a questionnaire or measure's accuracy (Ruel, Wagner, and Gillespie 2016:88) and more robust methods were used to address content validity.

Content validity is fundamental when the purpose of a questionnaire is to examine complex concepts as questions need to be “*comprehensive, relevant, and representative*” of the multidimensional topic of interest (Ruel, Wagner, and Gillespie 2016:89). It also focuses on logical thinking and not on statistical inferences (Wilson and Joye 2017:186). To achieve content validity, knowledgeable reviewers and experts in the field were asked to identify the degree to which selected questions covered the most critical aspects of the topic of interest and to identify any unrelated items (Oppenheim 1992:162; Liamputtong 2013:170). The first step was a careful and exhaustive examination of the current literature and discussion of all critical dimensions of the topic with the supervisory team and a panel of experts. The next step required revision of questions that had been identified as misleading, irrelevant, or off topic. This revision stage was an iterative process in which feedback and comments from various sources were reviewed and used to make changes to the questionnaire.

The supervisory team reviewed the first draft of the questionnaire in different stages. First, I sent a draft copy to them via an e-mail requesting advice on the content and the wording of the questions. It was evident from the feedback that the tone of some questions was 'unfriendly' or 'too formal' which could cause respondents to disengage and reduce responses. Items that they considered did not map the qualitative findings or were perceived as repetitive were discussed and usually removed. Much of the discussion focused on the type and format of the questions, for example, in the question "How much does your condition interfere with different aspects of your life" I was advised to specify a timeframe and add "over the last six months" as otherwise, respondents would not be able to respond accurately. The supervisory team also suggested reversing a few Likert scale questions to prevent a response set e.g. a respondent ticking 'strongly agree' for everything without reading the question. However, this was changed again in the final version as other reviewers and two pilot test respondents advised against it.

After revising the questionnaire, a new copy was sent to the supervisory committee members to clarify if these changes sufficiently reflected their comments. One supervisor checked the questionnaire for common errors, for example, double-barrelled items or confusing and leading questions. Lastly, the team made a few editorial comments and identified spelling mistakes before the final version of the questionnaire was sent for review to the Board of the Association of Chartered Physiotherapists in Occupational Health and Ergonomics. The Board members agreed that the questions were appropriate and rated them using a dichotomous system and confirmed that the content was accurate and that no key topics were missing.

It was important to ensure that there were no technical issues with the online format of the questionnaire. The Director of Studies completed the questionnaire online and noted errors. A few questions were created with the feature of 'logic,' e.g. directing respondents to a particular page based on the response given and, as a result of this process, we identified that the routing question "Which of the following best describes your present work situation?" allowed the participants to continue the questionnaire without giving a response and this was corrected.

7.15 Data analysis

The online questionnaire generated numerical data, which was analysed using descriptive statistics. Descriptive statistics summarise the characteristics and responses of a sample and highlight potential relationships between the identified variables (Gray 2018:617; Johnson and Christensen 2020:474). In addition, the Chi-squared test Spearman correlation was used to analyse the relationship between rank-order data. The data generated from the single forced response questions are presented in percentages with the exception of the data acquired from the multiple-response questions which are presented as number of respondents.

Data analysis begins with the coding and the transfer of all questions to an appropriate statistical software. The Online Surveys tool included the option to automatically code and export the responses into the SPSS version 25. A total of 112 questionnaires were received, but only 107 questionnaires were included in the final database. The responses to each question / item were mandatory meaning that respondents had to answer them before submitting the page. If respondents did not answer a forced response question, they were not

able to advance to the next page until they fulfilled the requirements. In this way, the Online Surveys tool ensured that there are no spoiled questionnaires and those respondents who decided not to respond to a question were required to close their internet browser and withdraw. Five questionnaires were excluded from data analysis through routing questions which directed respondents to the end of the questionnaire based on the previous answers they gave. Three questions in the first section of the questionnaire identified respondents who, despite not meeting the inclusion criteria, had opted to complete the questionnaire. These routing questions were related to the age range (below 50 years old), employment status (self-employed or retired) and stage of the MSD (< 3 months).

The next step focused on the statistical analysis of the coded data using SPSS. The questionnaire included categorical data, which involved names or groups (nominal data) or categories ranked in an ascending way (ordinal data) (Gray 2018:612). Thus non-parametric methods (charts or graphs) were employed to describe and analyse the variables. The analysis began by running frequency distributions for each question to identify the percentages of respondents who selected each response option. The Likert scale questions presented with a five-point definite order (e.g. 5. Strongly Agree, 4. Agree, 3. Neither Agree nor Disagree 2. Disagree and 1. Strongly Disagree). These categories are not necessarily equal and it was not possible to make any statistical assumptions (Jamieson 2004). It has been previously discussed that the middle response in these questions served as a neutral or undecided response in order not to force respondents into a more positive or negative category. Thus the frequencies below and above the middle response were

added together to present the final scores. The scale items were recoded into new variables and presented in a three-point scale (e.g. 3: Strongly Agree/ Agree, 2: Neither Agree nor Disagree and 1: Disagree/Strongly Disagree).

Lastly, a non-parametric bivariate analysis was employed to assess the relationship between different variables. Spearman's Rho (ρ , also signified by r_s) correlation coefficient was chosen as a non-parametric test to measure the strength and association between two ordinal variables (Field 2018:351-352). All statistical correlation coefficients are described using numbers ranging from -1 to $+1$, where 0 indicates no correlation, $+1$ is a perfect positive correlation and -1 is a perfect negative correlation (Allen 2017:274). Leclezio et al. (2015) conventions to interpret the strength of the relationship between two variables were used (Table 7.6).

Table 7.6: Spearman Rank Order Correlation Coefficients (Leclezio et al 2015)

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Chapter 8: Survey Research Findings

8.1 Introduction

This chapter provides a detailed overview of the findings of the survey research component of this study. The questionnaire data describes respondent characteristics, explores relationships, and identifies the primary strategies used by older employees, located in the West Midlands, to manage a CMSD. Descriptive statistics were used to report the findings using graphical analysis and tables (Gray 2018:617; Johnson and Christensen 2020:474). Analysis of the questionnaire was based on the objectives of the study and descriptive statistics and non-parametric correlation tests have been applied to relevant items of each question. The three highest scores, and the most significant and relevant correlations, are presented and discussed. The questionnaire comprised six sections and these have been used to organise this chapter and to present the findings:

1. Respondent demographic variables such as age, gender, ethnicity, type of CMSDs
2. Employment characteristics and profile, such as the type and size of the organisation and work-related activities
3. Key dimensions of life and impact of CMSD on job roles and performance
4. Management strategies being offered and used in the workplace
5. Factors influencing the management of CMSDs at work
6. Retirement plans and the ability to work until the state pension age

8.2 Respondent Demographic Variables

The demographic data generated by this questionnaire consisted of age, ethnicity, gender, work location, length of time since diagnosis of the CMSD and the type of the CMSD. In total, 107 employees over the age of 50, completed the online self-administered questionnaire. Ninety percent of the respondents declared as British, 76% were working in the West Midlands, whereas the rest of the sample was employed in neighbouring counties. Lastly, 82 percent of the respondents identified themselves in the 50 - 60 years age category and constituted the majority of the sample, whereas 19% was above the age of 60 years old. Table 8.1 Respondent profile which includes gender, age group, ethnicity and work location.

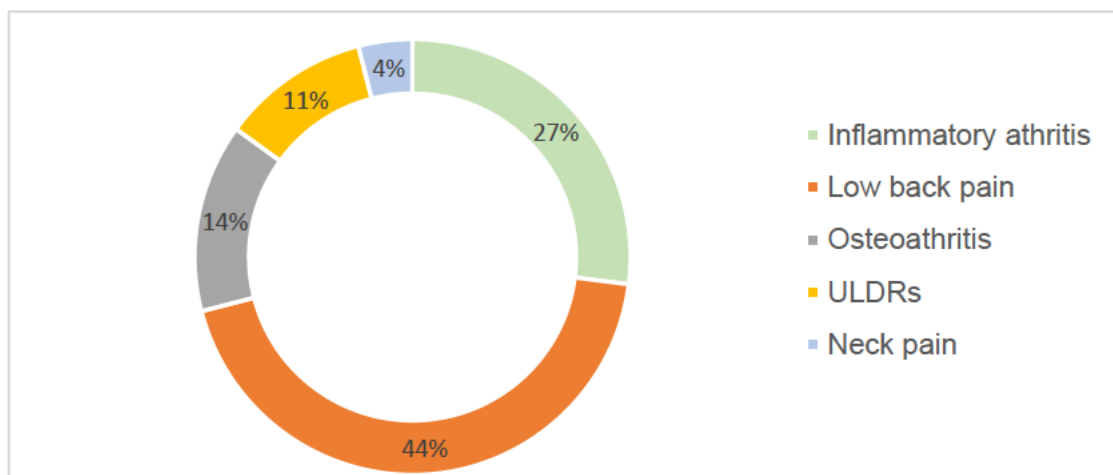
Table 8.1: Respondent profile (N=107)

Gender	Count (N)	Percentage (%)
Male	44	41
Female	63	59
Age group		
50-55	52	49
56-60	36	33
60-65	17	16
>66	2	2
Ethnicity		
British	97	90
Other	10	10
Work Location		
West Midlands	81	76
Other	26	24

The respondents briefly identified the CMSD in the form of narrative responses that were grouped according to the mechanical or inflammatory feature of the condition and the body area. Forty-four percent of the sample presented with chronic low back pain and 27% with an inflammatory MSK

condition (such as ankylotic spondylitis, rheumatoid arthritis or psoriatic arthritis). Fourteen percent of the respondents stated that they had OA (knee and hip), 11% identified upper limb disorders (ULDRs) and 4% chronic neck conditions (Figure 8.1). Eighty percent of the target sample identified that they had experienced a CMSD for more than two years, whereas 19% chose the six months to two years range. Only 1% of respondents identified having a CMSD for a shorter period of 3-6 months.

Figure 8.1: CMSDs identified by the respondents



8.3 Employment characteristics and profile

This section of the questionnaire identified the type of industries that employed the respondents and the characteristics of their employment, such as, size and type of organisation, part-time or full-time role employment and work-related activities. Respondents selected the industry that best reflected the one they worked for. The final list demonstrated an adapted version of the UK Standard Industrial Classification of Economic Activities (ONS 2016) as not all industries were selected by the respondents. Most of the respondents worked in education and training (20%), and the second-largest groups were equally

distributed between healthcare (14%) and manufacturing (14%) (Figure 8.2). The majority of females were employed in education (25%) and health care and social work (19%) whereas the majority of male respondents were employed in manufacturing (25%) and professional, scientific and technical services (12%). Only a minority of respondents (4%) were employed in wholesale and retail trade which reflects the difficulties to access potential respondents as the majority of retail companies approached declined to administer the questionnaire to their employees. Table 8.2 shows the percentage of males and females in the identified industries. Moreover, in responding to question 14, a fifth of the respondents (18%) indicated that they worked part-time, whereas the rest (82%) were in full-time employment.

Figure 8.2: Type of employment (categorised by the European Union industrial classification system)

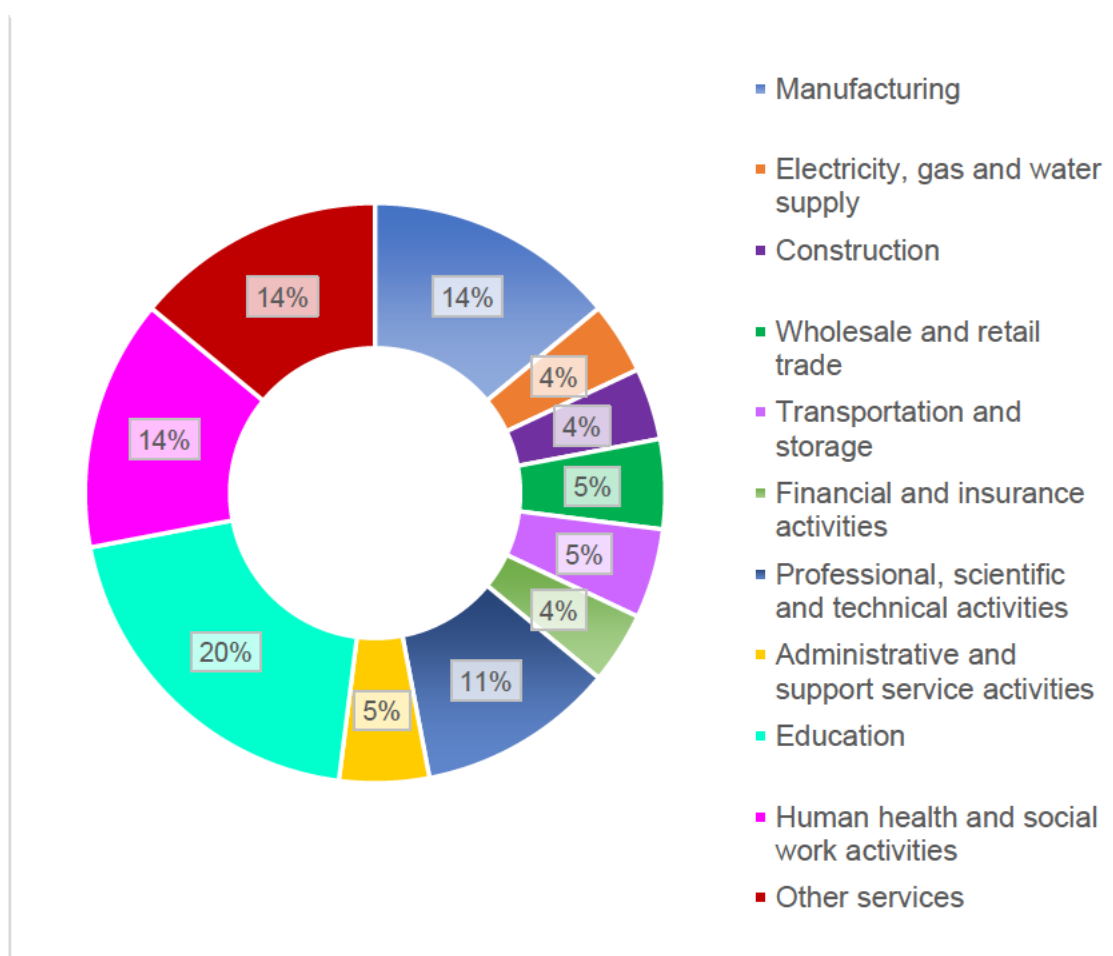
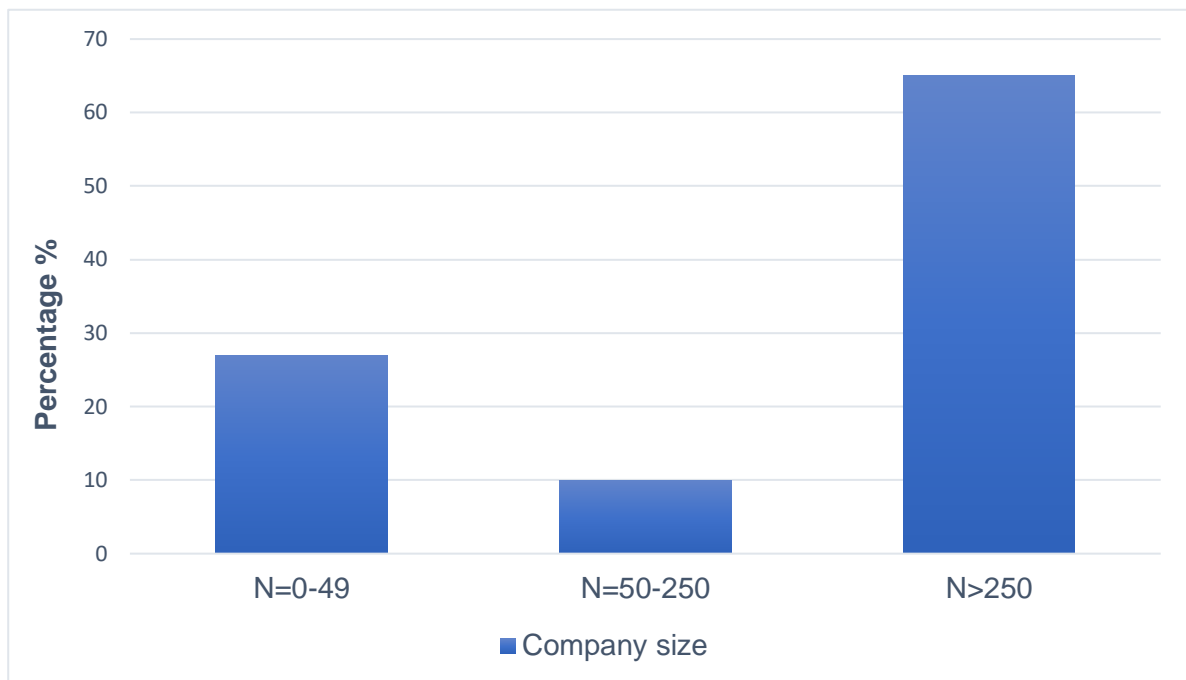


Table 8.2: Respondents' employment categorised by industries and gender

	Male (%)	Female (%)
Manufacturing	25	5
Electricity, Gas, Water supply	5	4
Construction	2	4
Wholesale Retail Trade	5	2
Transportation and storage	9	6
Financial and Insurance activities	0	6
Professional, Scientific and Technical Services	12	8
Administrative and Support Service activities	2	5
Education	14	25
Human Health and Social Work	7	19
Other Services	19	16

Question 15 sought to identify the number of employees working in each organisation as this information indicates the size of the organisation. Following the Department of Business Energy and Industrial Strategy (2019), any company with fewer than 250 employees is defined as small and medium-sized business (SME). Based on this definition variables were re-coded in SPSS. Sixty-five percent of the respondents were employed in large companies (more than 250 employees), 10% in companies between 50-250 employees (medium-sized companies) and 27% was working in small companies that employed between 0-49 people (Figure 8.3).

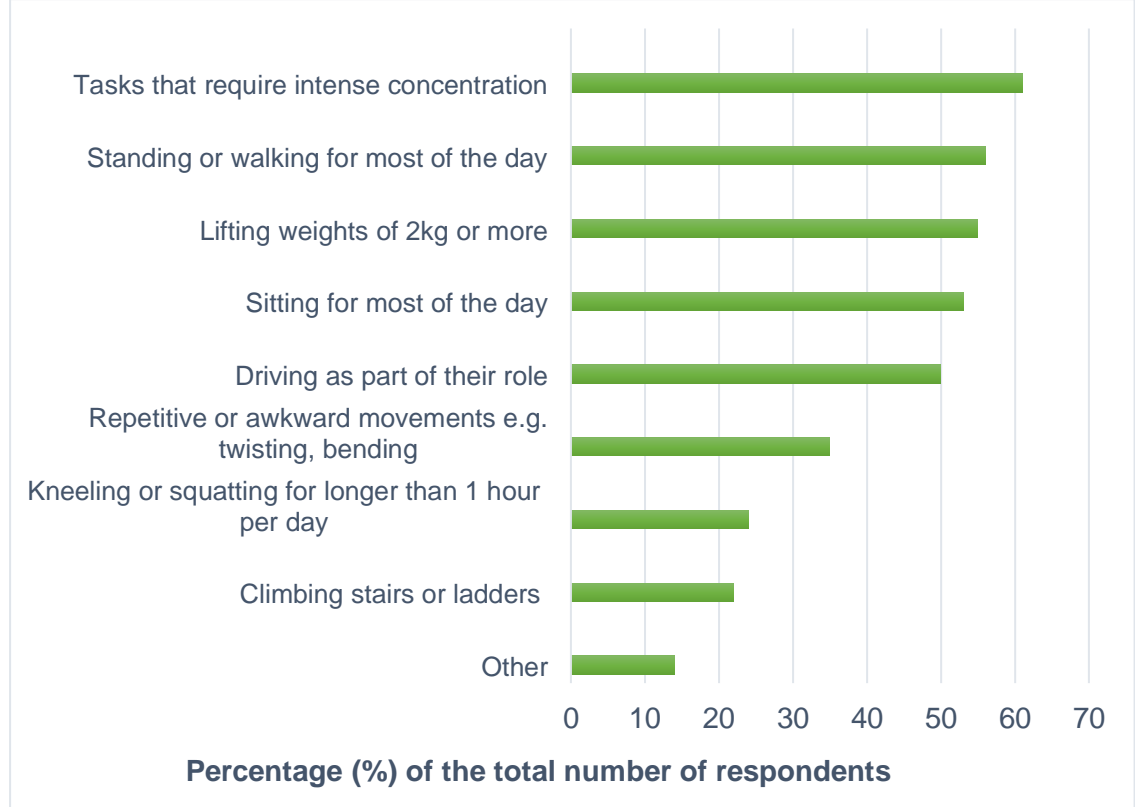
Figure 8.3: Organisation size (based on number of employees)



In this section of the questionnaire, respondents were asked a multiple response question to identify the activities they engaged in that characterised a typical day at work (Figure 8.4). When appropriate, activities were grouped together, for example, driving most of the day, driving between sites and driving between cities was recoded as driving as part of their role. Findings are presented as a percentage of the total number of respondents thus these percentages cannot add up to a total of 100%. Sixty-one percent (N=65) identified themselves as doing tasks that required intense concentration in addition to the other physical duties. Fifty-three percent of the respondents (N=57) declared sitting for a long time, whereas 56% (N=60) had roles that required them to walk or stand most of the day. Fifty-five percent (N=59) of the respondents had to frequently lift a small to a large load as part of their job role whereas 35% (N=37), declared that their daily routine included repetition of awkward positions, such as, twisting and bending, 24% (N=26) kneeling and

squatting and 22% (N=24) climbing stairs and ladders. Fifty percent (N=53) were required to drive as part of their role whereas a small percentage of respondents (14%, N=15) selected the option “other” and provided examples of activities, such as kitchen activities (cutting, stirring), cleaning, typing, and answering the phone.

Figure 8.4: Typical daily work activities

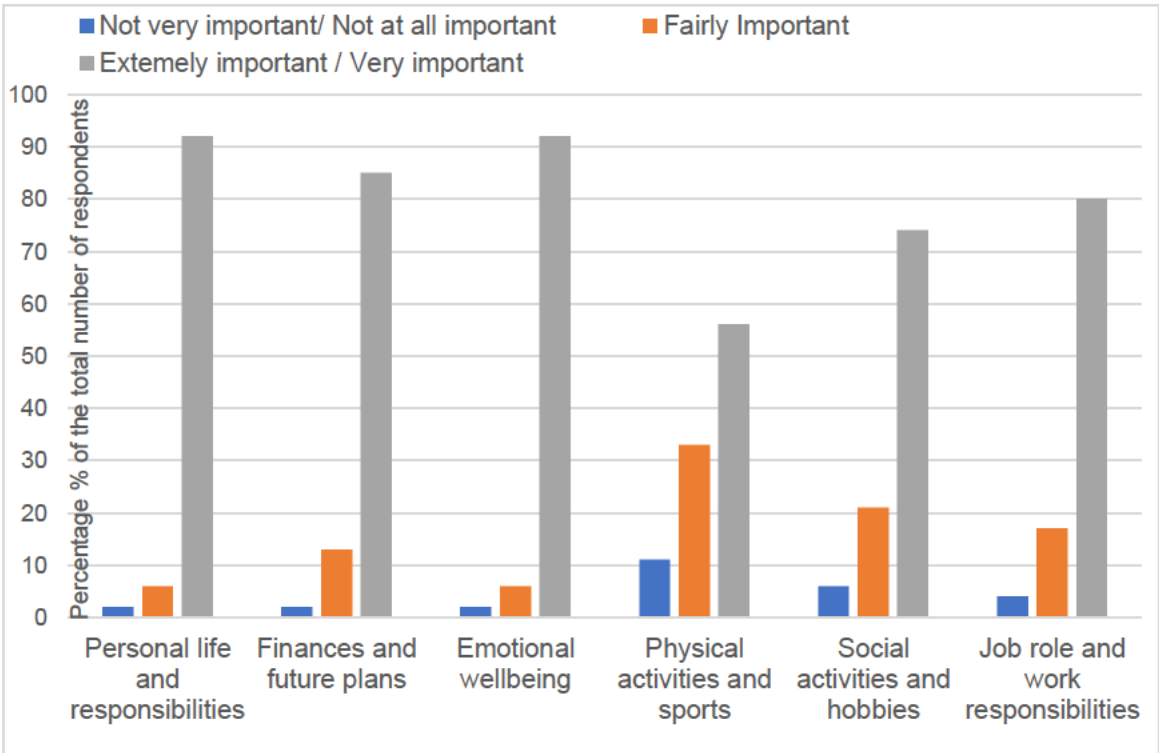


8.4 Key dimensions of life and impact of CMSD on job roles and performance

This section of the questionnaire primarily focused on identifying how important it was to respondents to perform well in each of the six key dimensions of life (Figure 8.5). Findings are presented as a percentage of the total number of respondents thus these percentages cannot add up to a total of 100%. Eighty percent reported that it was 'very' to 'extremely important' to perform well within their job, and 74% felt that it was more important to be

socially active and have hobbies. Fifty-six percent of the respondents felt that physical activities and sports were quite crucial to them, whereas 92% indicated that both emotional status and personal life performance dimensions were vital elements of their wellbeing. Lastly, 85% of the target sample identified that it was essential to manage finances and future plans effectively. Performing well in their professional career was the fourth most important life dimension after emotional status, personal life performance and managing finances and future plans. This finding indicates the importance that respondents attributed to achieving a balance between key life dimensions, such as, work and personal life.

Figure 8.5:Importance of performing well in key life dimensions



Question 18 sought to identify the respondents' current work ability on a scale of 0-10 by comparing the highest work ability level they experienced during their career with their current status (Figure 8.6). This question used the

validated Work Ability Score (WAS) (El Fassi et al. 2013) which categorises work ability as poor (0-5 points), moderate (6-7), good (8-9) or excellent (10). Fifty-three percent of respondents declared poor work ability whereas 17% indicated that it only moderately affected them. Twenty-nine percent reported good work ability and 7% indicated they were not affected at all. Also in this section respondents were asked how much the CMSD interfered with their ability to work over the previous six months (Figure 8.7). A majority of respondents (60%) reported that the CMSD interfered 'Quite a lot/Extremely' with their ability to effectively work during the past six months and 26% indicated that they were 'extremely affected'.

Figure 8.6: Comparison of work ability status in the last 6 months

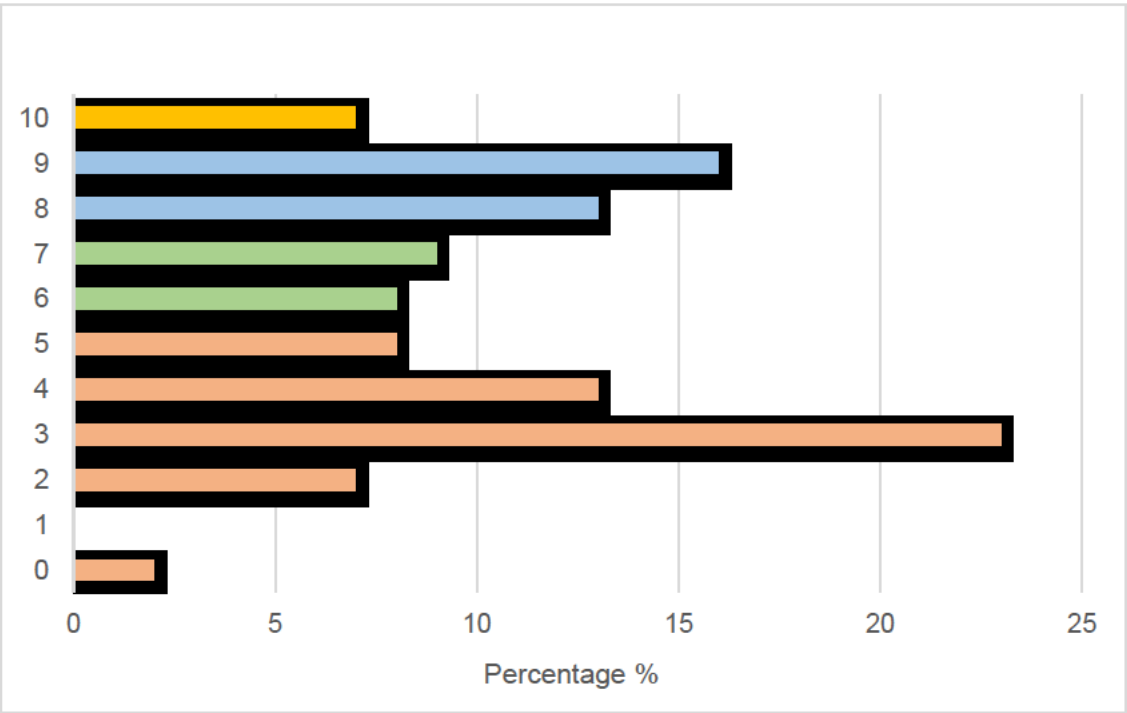
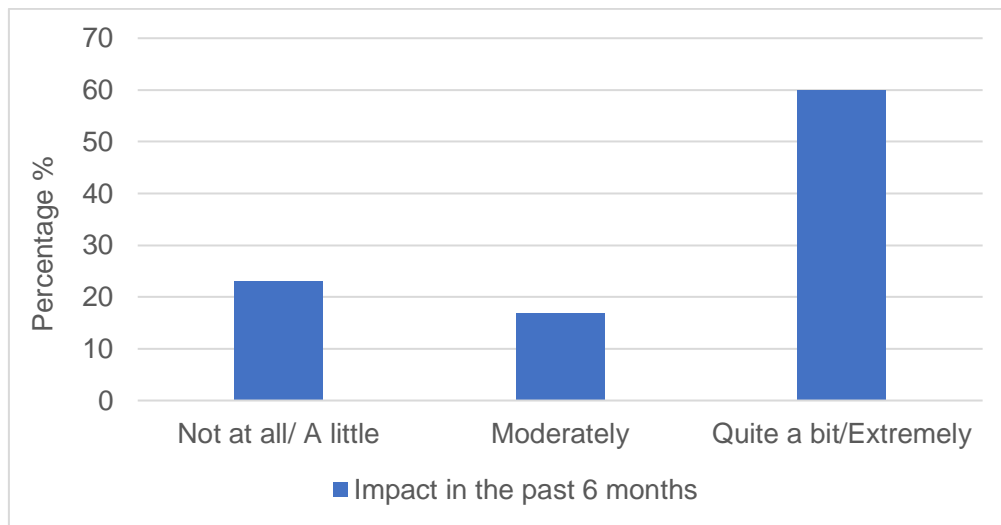


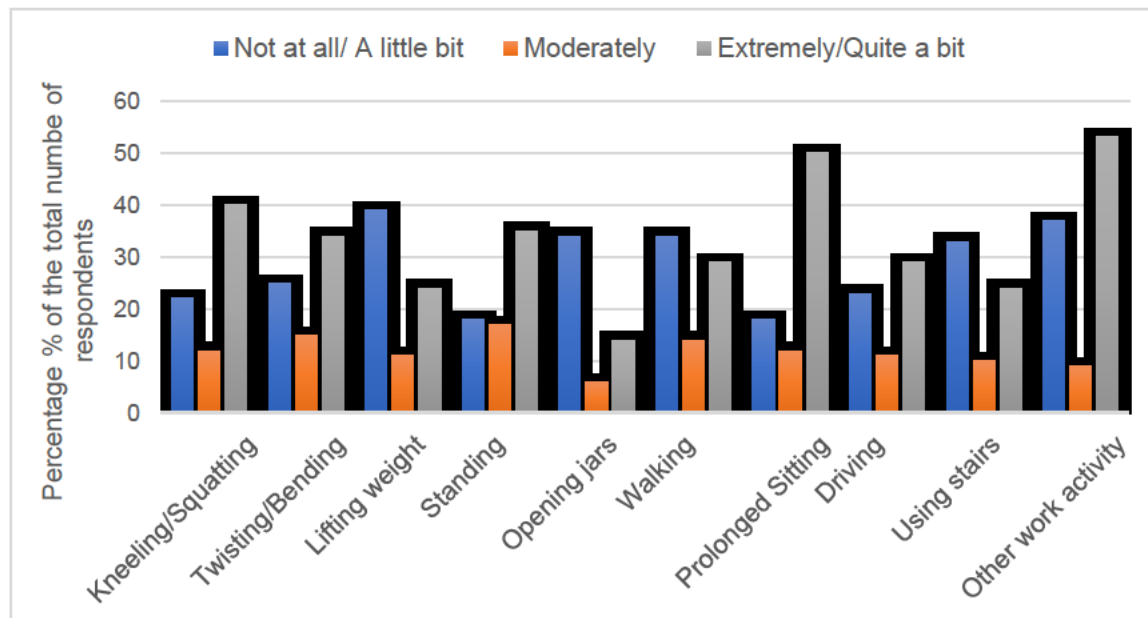
Figure 8.7: Impact of the CMSD on work ability over the previous 6 months



Question 20 used a five-item scale, to quantify the extent that CMSDs affected each of a list of activities (introduced in Question 16) (Figure 8.8). Frequencies of responses to items below and above the mid-point of the scale were aggregated to present the final scores. Findings are presented as a percentage of the total number of respondents thus these percentages cannot add up to a total of 100%. Fifty percent of the respondents indicated that their ability to sit for a prolonged period required at work was impacted 'quite a bit/extremely' by the CMSD and similarly 35% identified that standing for a long time was challenging due to their CMSD. Forty percent of the respondents identified that kneeling or squatting was affected and 24% indicated that it was hard to lift/move weighted equipment at work daily. Other work activities affected were twisting or bending forward (34%), walking (29%) driving (29%), using the stairs (24%) and opening jars (14%). In addition, 53% of the target sample indicated that 'other' activities impacted them at work, and added examples, such as, typing, computer use, assembling and carrying equipment and cleaning tasks. This finding indicates that work activities are multifaceted

within, and between, different industries and may affect employee's health, work performance and management of CMSDs in different ways.

Figure 8.8: Impact of CMSDs on the performance of work activities



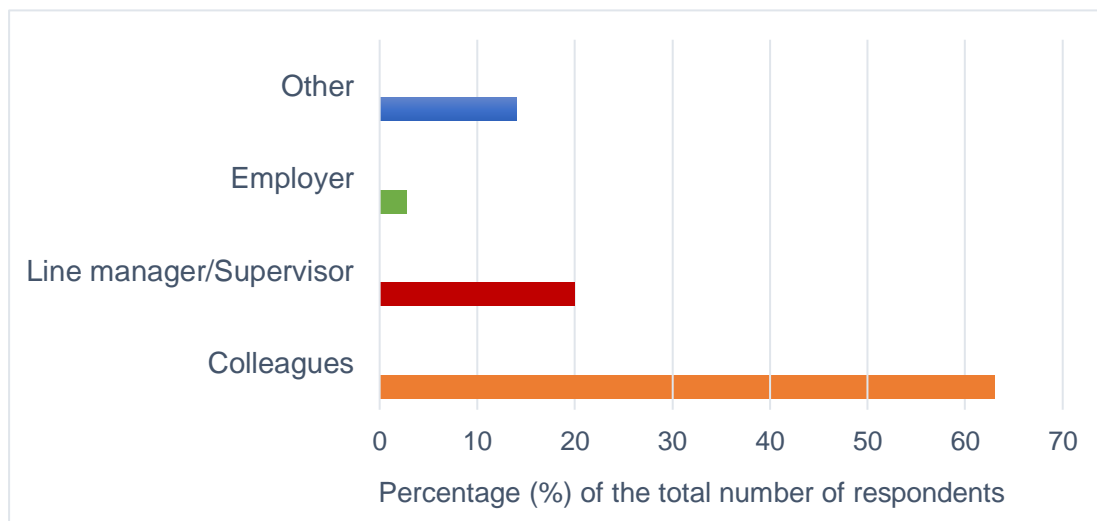
8.5 Management strategies offered and used in the workplace

This section of the questionnaire focused on how employees with a CMSD were supported at work by employers and staff members, the nature of the support offered, the strategies they used, and how useful and important this support was to them.

Respondents identified who they primarily discussed their condition with at work (Q21). They were given four choice options: employer, line manager, supervisor or colleague and, in addition, two 'other' options were available to identify other personnel with whom they might confide, e.g. on-site healthcare professionals. The options of 'supervisor and line-manager' and 'option 1 and 2' were grouped for the purpose of the analysis (Figure 8.9). Findings are presented as a percentage of the total number of respondents. Sixty-three

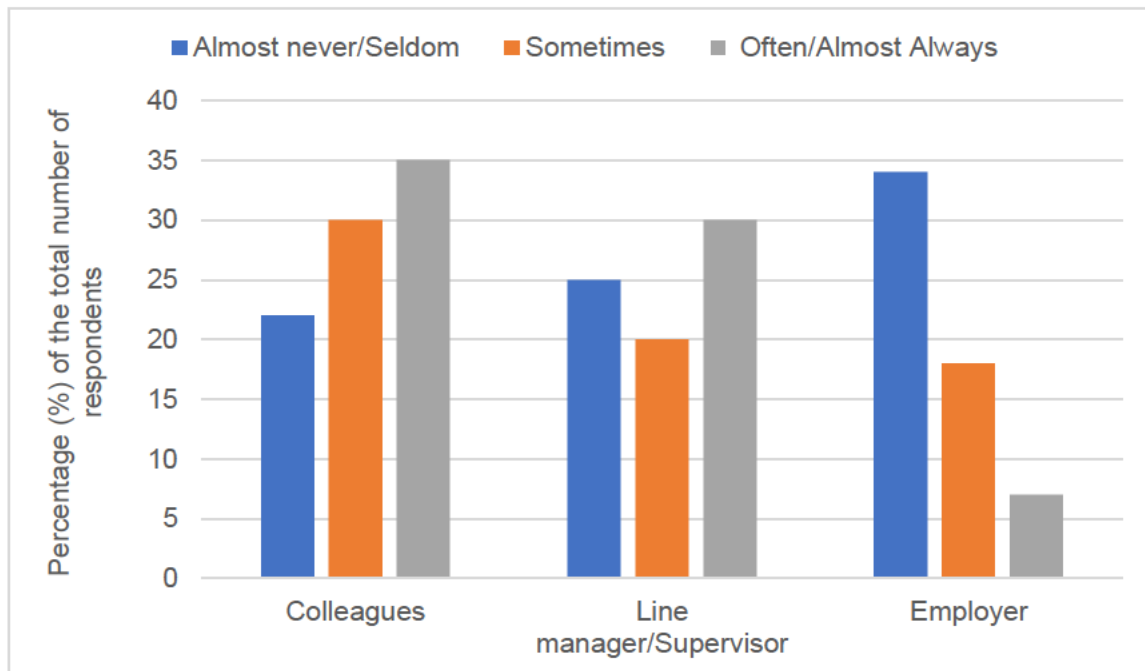
percent (N=73) indicated that they discussed the CMSD mostly with their colleagues and 20% (N=21) with their supervisor / line manager. In contrast, only 2.8% (N=3) indicated that they would discuss the condition and its relation to work with their employer. Fourteen percent (N=15) selected the 'other' option where unanimously said that they did not discuss the CMSD with anyone in the workplace. This finding highlights that respondents felt more comfortable and preferred to discuss their health with people they know and interact on a frequent basis like their colleagues in the workplace.

Figure 8.9: Discussion about CMSDs in the workplace



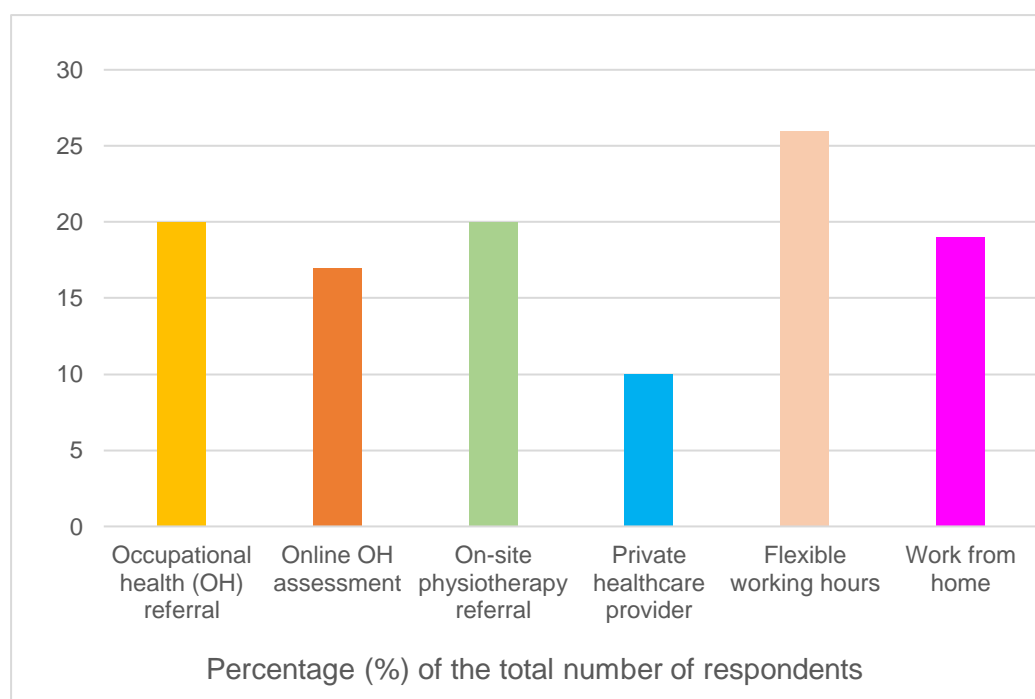
Respondents were asked to indicate the degree of support they received at work using a five-item scale ranging from 'almost never' to 'almost always' (Figure 8.10: Support from colleagues and employer). Thirty-five percent of the respondents indicated that they receive support from their colleagues and 30% they would get help from their supervisor or their line manager. Only 7% reported that their employer would support them in managing a CMSD. Rather surprisingly of the 65% of those who discussed the CMSD with their colleagues only 25% noted that they got social support from them.

Figure 8.10: Support from colleagues and employer



Services offered in current and previous workplaces to assist respondents to manage the CMSD was the focus of a multiple-response question (Q23) and the data is presented as a percentage of the total number of respondents (Figure 8.11: Services offered to respondents in the workplace). Twenty percent (N=31) were referred to occupational health and 17% (N=18) were offered an online occupational health assessment. Nineteen percent (N=21) were referred to an on-site physiotherapy clinic and 10% (N=11) accessed a private healthcare provider. Twenty-six percent (N=28) were given the option of working flexible hours by their employer whereas 19% (N=21) employees were able to work from home. In addition, 10% (N=11) were provided with a room/space in which they could individually do exercises or other types of physical activity. Twenty-four percent (N=26) indicated 'no support' or that 'nothing was provided' to assist them in managing the CMSD in the workplace. Lastly, 39% (N=42) of respondents selected the 'other' option.

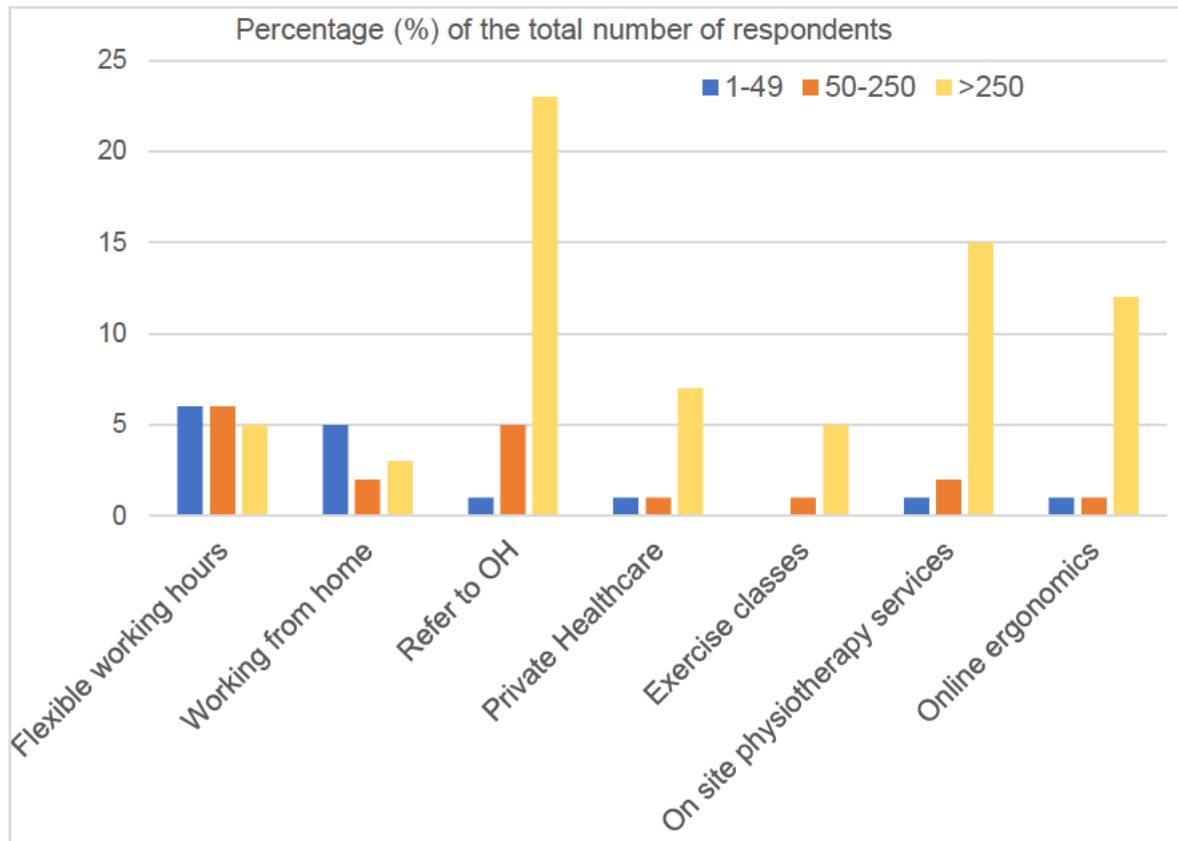
Figure 8.11: Services offered to respondents in the workplace



Eleven percent (N=12) provided examples of how they self-manage the condition and 5% (N=6) provided examples of different strategies that they were offered which were not included in the question items, for example, use of a standing desk, job sharing and a reduction in working hours.

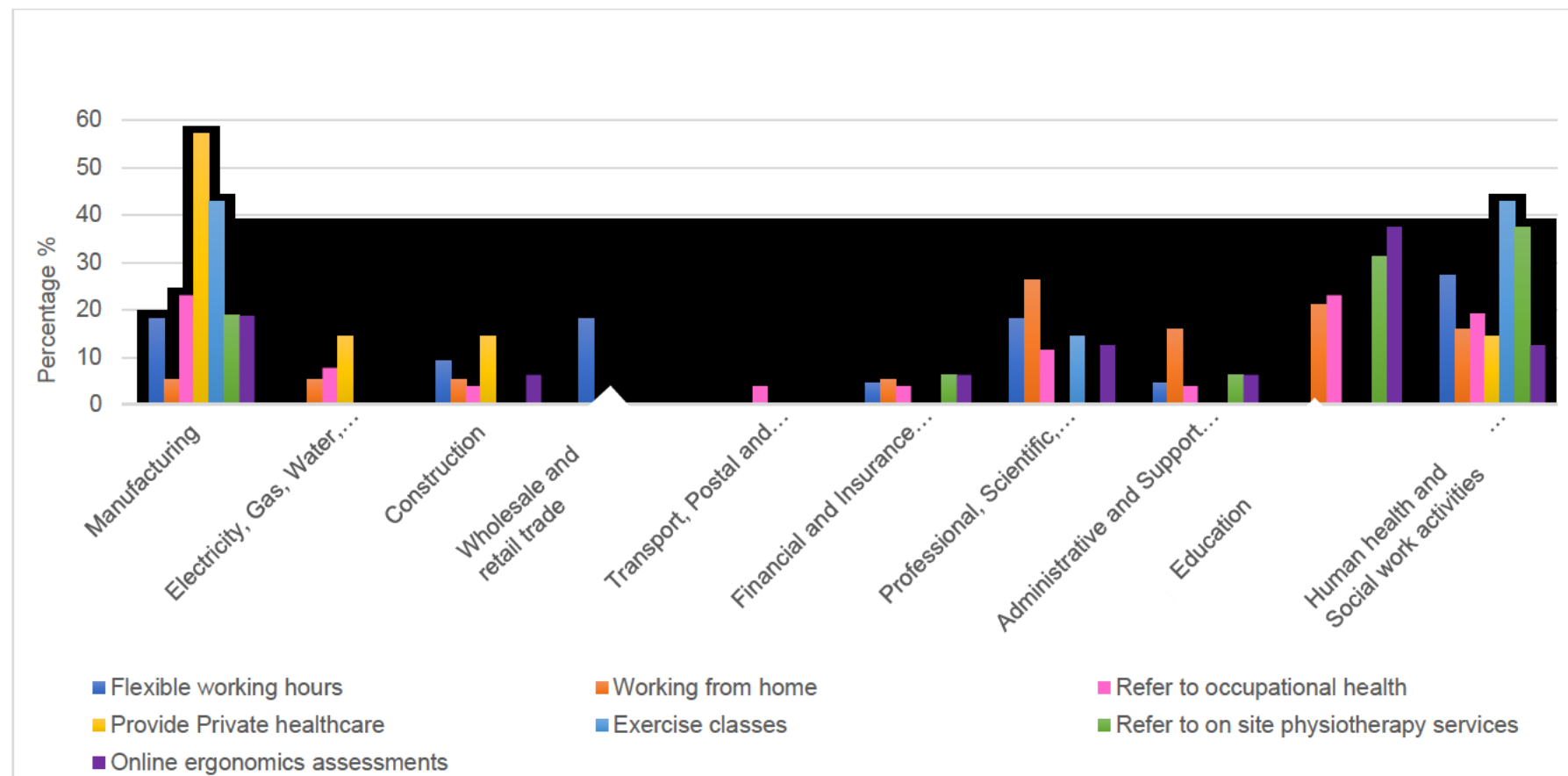
The study findings also indicated that the size of organisation had little effect on the number of people offered services in the workplace (Figure 8.12 Size of organisation and services offered employees to support the management of CMSD in the workplace). For example, only 23% of those working in large sized companies (65% of the respondents) were referred to OHS.

Figure 8.12: Size of organisation and services offered employees to support the management of CMSD in the workplace



Another unanticipated finding was the limited services offered to support employees by the different organisations represented in this study (Figure 8.13 Services provided for employees with CMSD in different industries). It appeared that most respondents reported being offered only one service option by their employees. Options are necessary to accommodate the different needs of employees particularly those with a CSMD but this imperative is not reflected in the study findings, for example, the retail industry primarily offered only the option of flexible working schedules (Figure 8:13).

Figure 8.13: Services provided for employees with CMSD in different industries



Two questions focused on respondents' perceptions of the effectiveness (Figure 8.14) and the importance (Figure 8.15) of the services offered to them by their employees. Respondents also indicated which services they had not been offered at work. Thirty percent (N=8/28) indicated that they found flexible working hours effective in helping them to manage the CMSD and an almost equal proportion (35%) considered this to be important in supporting them in the workplace. Thirty-four percent (N=7/21) felt that working from home was a useful and 20% emphasised its importance in supporting their work capacity. Being referred to an occupational health team was identified both as effective (30%, N=9/31) and important (23%) whereas only 5% (N=1/18) considered online ergonomic training sessions useful and (9%) important. Those who were offered private healthcare identified it as both an effective (12%, N=1/11), and vital strategy (11%). Using the gym facilities offered was perceived as effective (25%, N=3/11) and very important (20%). Lastly, respondents identified on-site physiotherapy as effective support (22%, N=6/21) and an almost equal number (25%) indicated that it was important to them. These findings indicate that those respondents who identified as effective the services offered by employers also considered them important in helping them manage the CMSD in the workplace. Interestingly, those respondents who were offered online ergonomic assessments did not find them effective nor important to them in managing the CMSDs.

Figure 8.14: Perceived effectiveness of services offered by the organisation

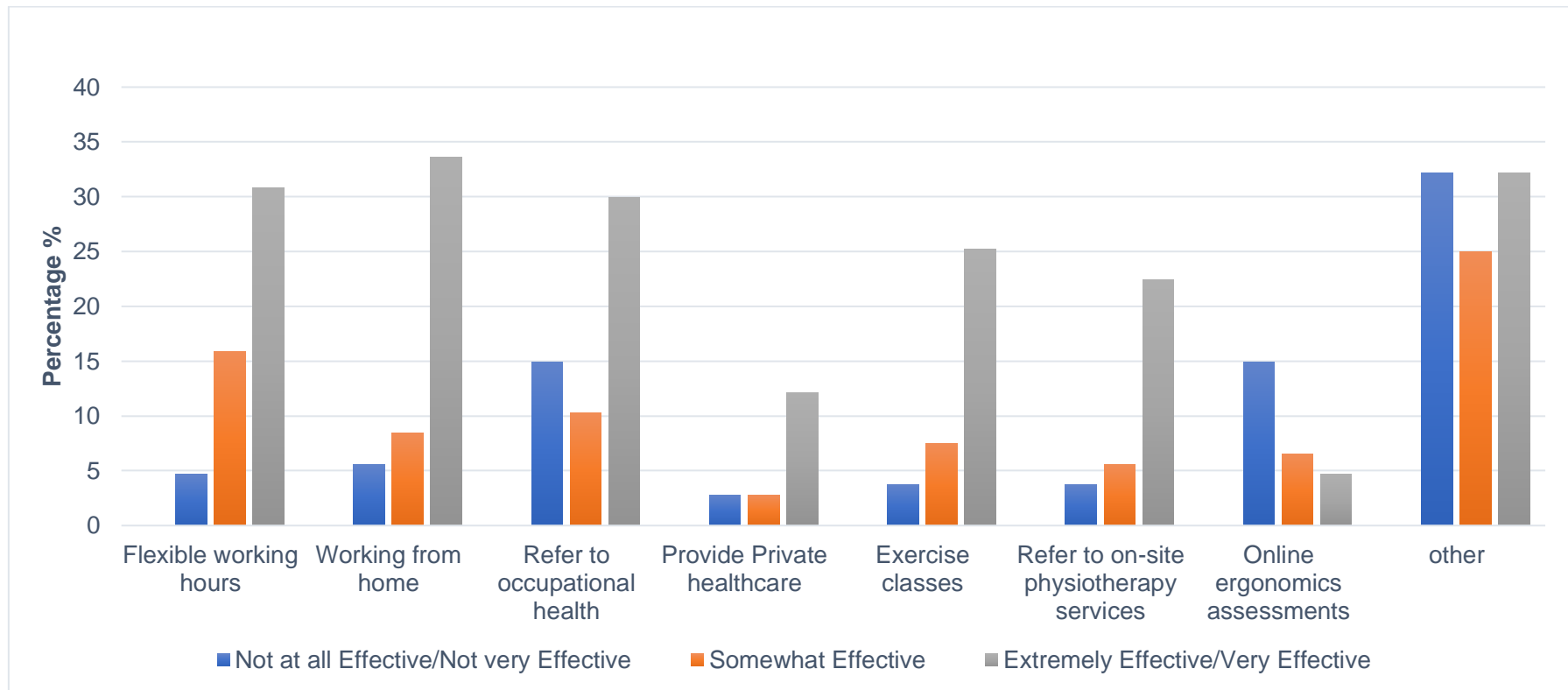
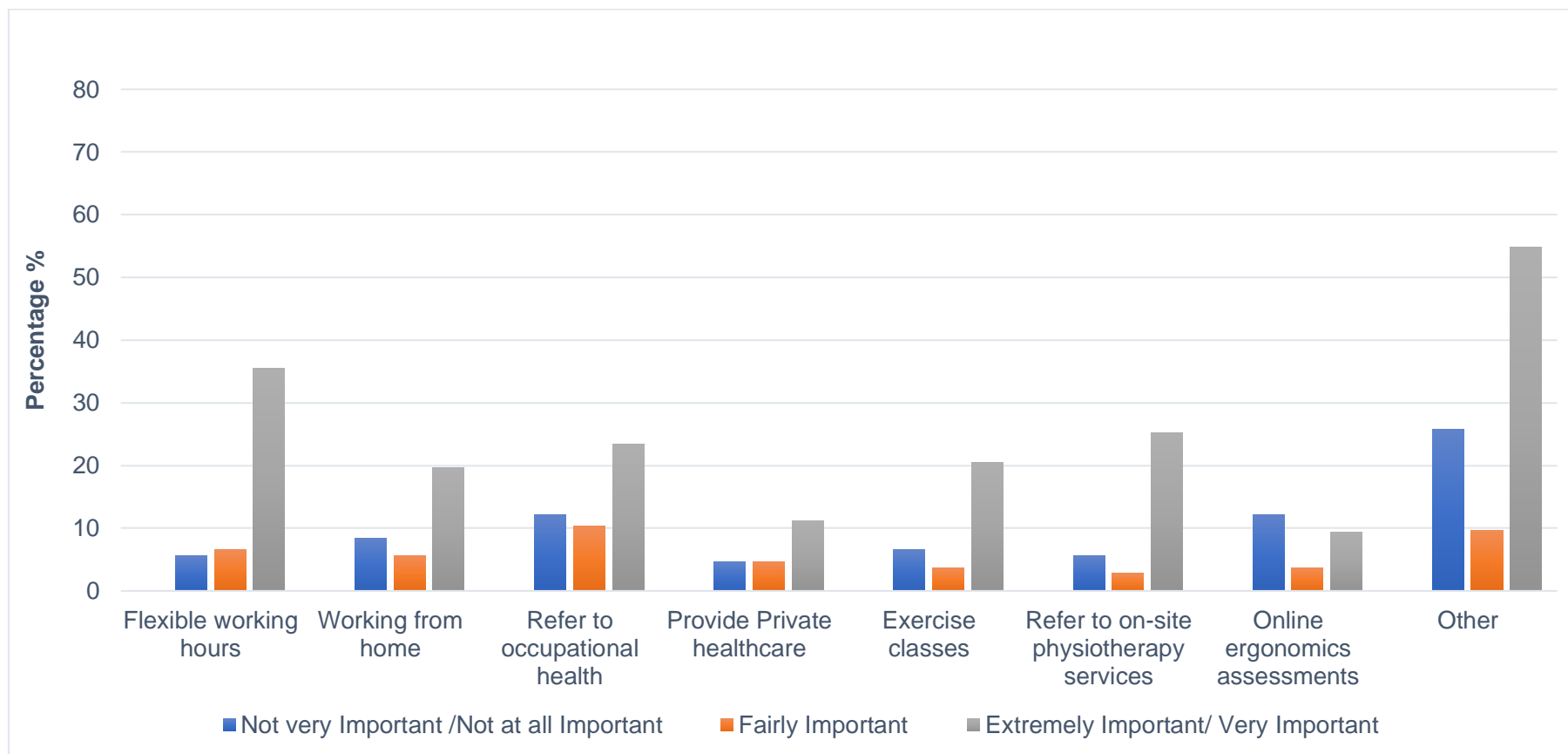
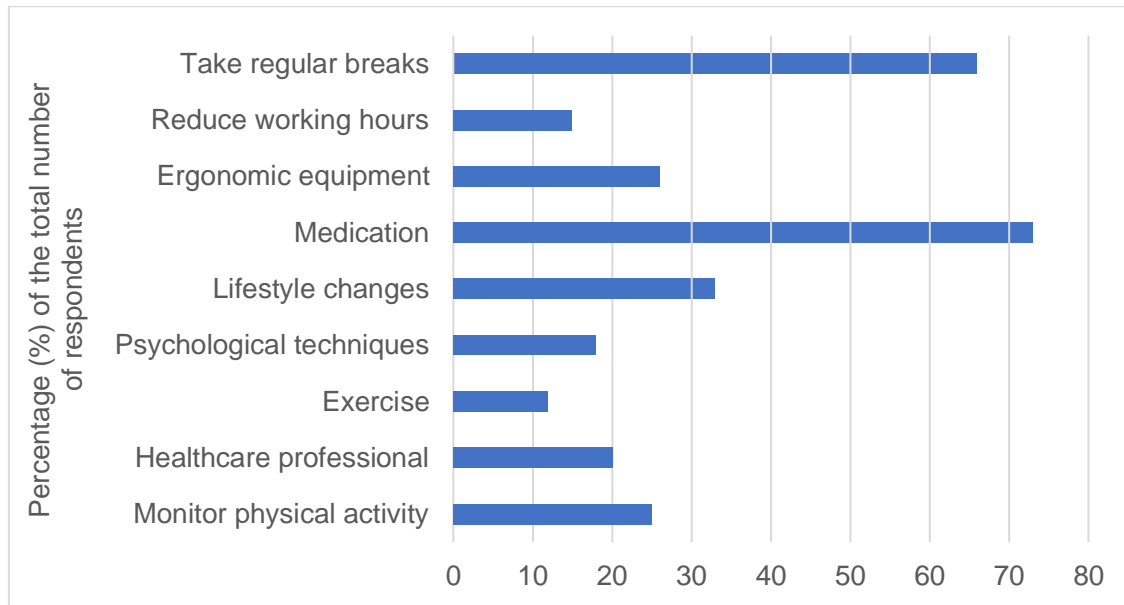


Figure 8.15: Perceived importance of services offered by the organisation



In the same section of the questionnaire, respondents were asked what strategies they had developed to manage CMSD in the workplace and how important they thought these were for their health (Figure 8.16). This was a multiple response question and data are presented as a percentage of the total number of respondents. Seventy-three percent (N=78) indicated that they managed the condition with medication and an almost equal proportion 66% (N=71) took regular breaks while at work. Thirty-three percent (N=35) indicated that they made lifestyles changes and, in this question, they were prompted to give a short explanatory response. These responses were grouped into thematic categories, such as attendance at off-site exercise/fitness classes, weight management and use of vitamins or supplements. Twenty-five percent (N=27) preferred to monitor their physical activity using a wearable watch or a mobile phone application and, interestingly, only 12% (N=13) of respondents used a gym when the employer did not provide gym facilities or pay the subscription. Twenty-six percent (N=28) indicated that they had purchased and used their own ergonomic equipment while 20% (N=22) visited a healthcare professional privately. Eighteen percent (N=19) used psychological techniques such as mindfulness or meditation and 15% (N=16) had made arrangements to work reduced hours. These findings highlighted how motivated the respondents were to self- manage the CMSD and the diversity of strategies they used. It is also interesting that a majority of the respondents selected 'passive' strategies, for example, medication, massage, and breaks rather than more 'active' strategies, such as, exercise and monitoring activity levels.

Figure 8.16: Strategies developed by employees to manage CMSDs in the workplace

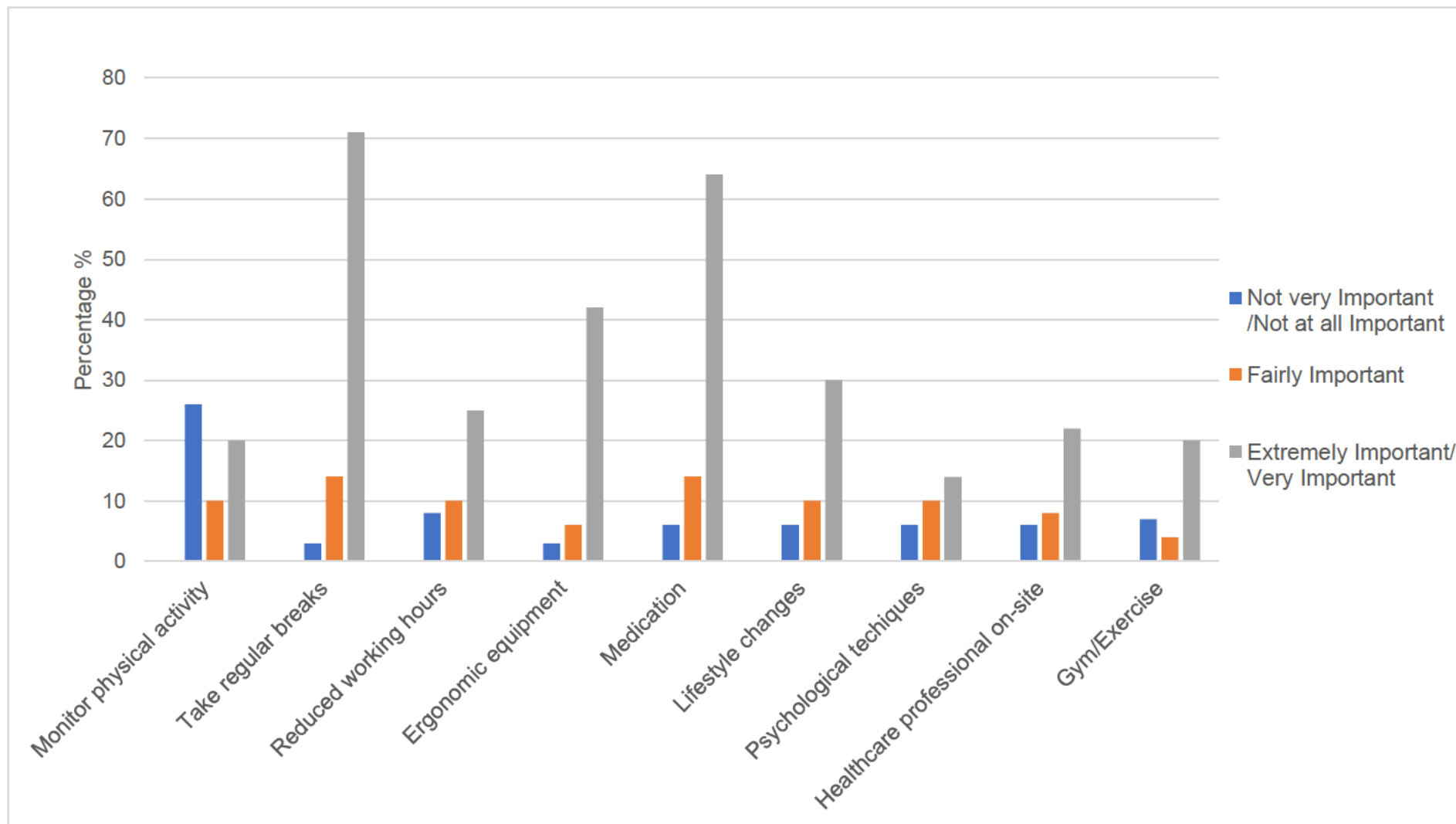


This section also focused (Q28) on assessing the importance that the respondents attributed to the strategies they had developed to manage the CMSD (Figure 8.17). Seventy-one percent believed that taking breaks when necessary was a particularly important strategy to use in managing the CMSD, and 25% (N=27) thought that reduction of working hours was also important and beneficial. Forty-two percent (N=44) reinforced the idea of using ergonomic equipment, even if their employer did not provide these, while a smaller percentage (20%, N=21) considered it important to have a gym membership and attend exercise classes close to their workplace. Twenty-two percent (N=24) indicated that access to on-site health professional services was very important to them, and 64% (N=68) considered taking appropriate medication an important strategy in helping them cope at work. Thirty percent (N=32) identified that changing their lifestyle was an important long-term strategy and 26% (N=28) suggested that monitoring their activity levels was useful. Finally, 15% (N=16) indicated that psychological approaches were important in keeping

them healthy at work. All respondents identified that this range of strategies with the use of ergonomic equipment, appropriate medication and regular breaks being the most significant.

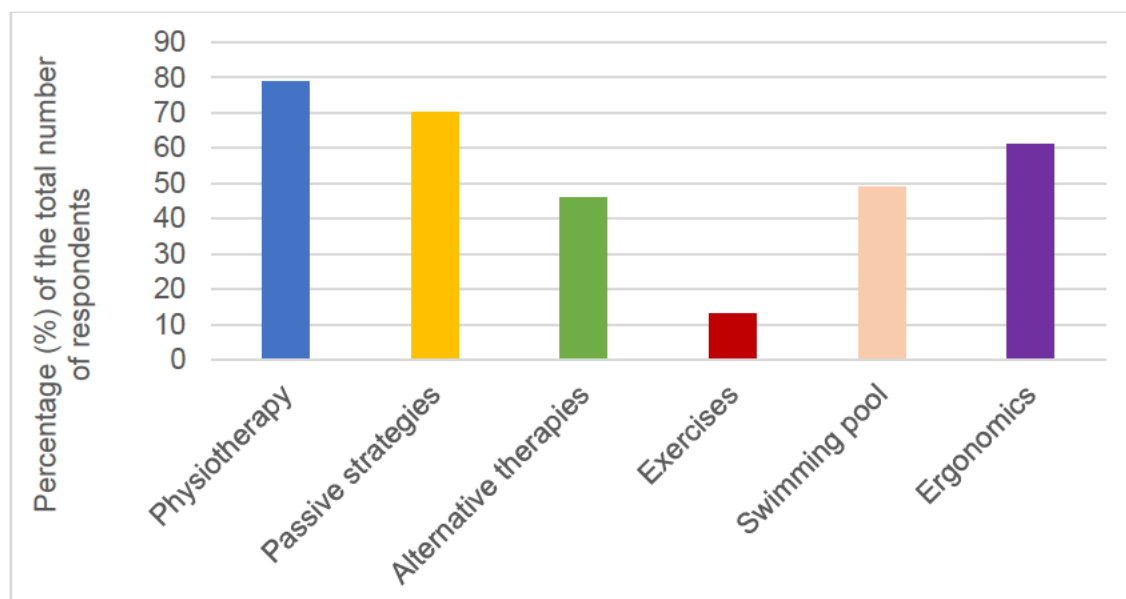
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Figure 8.17: The importance attributed by employees to the strategies they developed to manage CMSDs



Respondents were also asked to identify alternative strategies they had used to manage their condition outside the workplace (Figure 8.18). A large proportion of 79% (N=84) consulted a physiotherapist whereas 70% (N=75) indicated that they had used passive strategies such as massage therapy services or acupuncture. Forty-six percent (N=49) had accessed alternative therapies such as aromatherapy or used supplements. Twelve percent (N=13) used a form of exercise to manage the condition and 49% (N=52) preferred swimming. Lastly, 61% (N=65) selected other strategies that included a variety of ergonomic equipment that they bought themselves. In conclusion, the majority of the respondents sought professional advice and a big proportion used passive strategies to manage the CMSD.

Figure 8.18: Other strategies used to manage CMSDs in the workplace



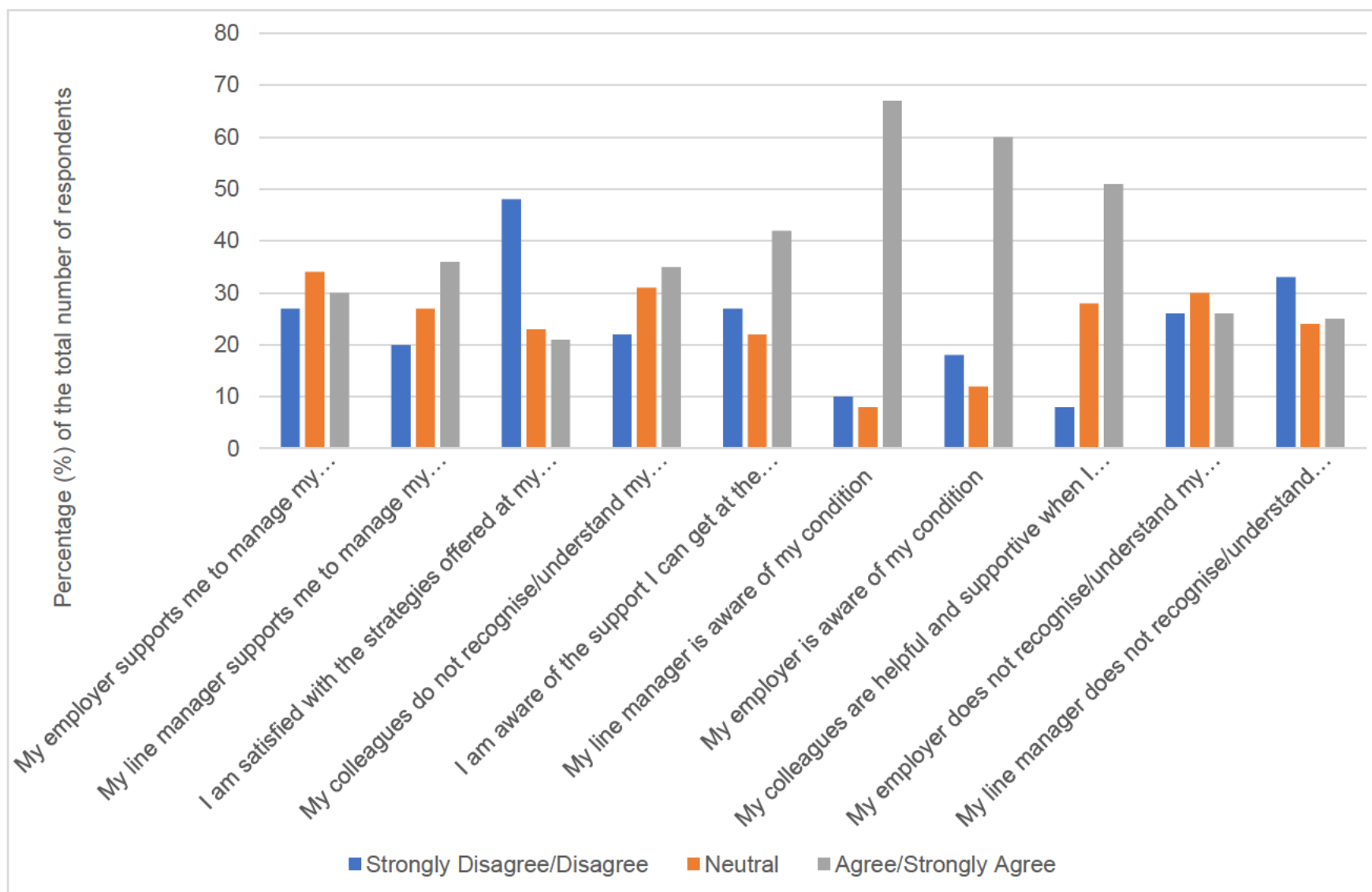
A forced response 5-point Likert scale question focused on the participants' degree of agreement (or satisfaction) with the support they received at work (Figure 8.19). The statement items listed in this question were explicitly derived from the findings of the qualitative phase of this MMR study. A majority of respondents (67%) disclosed the condition to their line manager but

25% of the respondents felt that their line manager did not actually recognise or understand the condition. These results were similar in relation to the employer. Sixty percent of the respondents discussed their health condition with the employer but only 30 % were satisfied with the support they received from them.

In addition, almost a third of the respondents (26%) reported that their employer did not recognise or understand the CMSD and only 36% felt that their employer supported them at work. Forty-two percent of respondents indicated that they were informed about strategies available to them in the workplace, but only 21% were satisfied with what was offered to them. Lastly, 51% declared that their colleagues were supportive when they are not feeling well although 35% declared that their colleagues did not understand or recognise the impact of a CMSD at work.

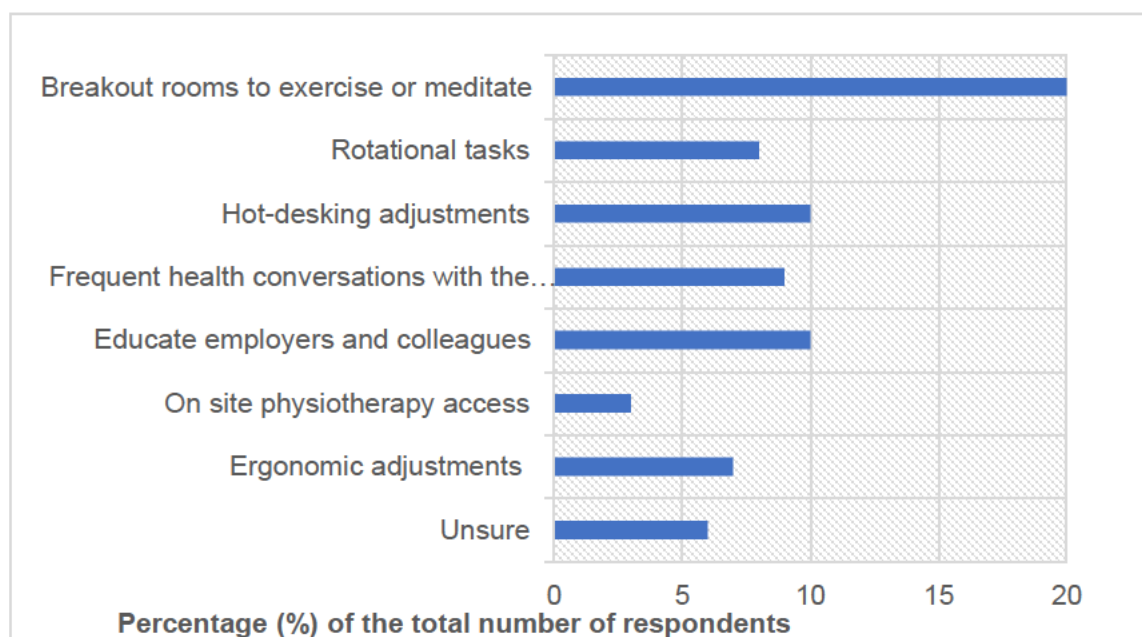
There was a significant positive relationship between a supportive employer, employees' awareness of supportive strategies in the workplace ($r_s(105) = .512, p < .001$) and the levels of satisfaction with the strategies offered ($r_s(105) = .690, p < .001$). Similarly, respondents who reported a supportive line manager were also aware of the relevant strategies ($r_s(105) = .365, p < .001$) and felt satisfied with what was offered to them ($r_s(105) = .540, p < .001$).

Figure 8.19: Respondents' degree of agreement with support provided in the workplace



Respondents were given the opportunity to respond in an optional open-ended question (Q30) to suggest alternative strategies by which they could manage a CMSSD in the workplace. There were seventy-four responses providing examples of alternative strategies which were grouped thematically, and the findings are presented as a percentage of the total number of respondents (Figure 8.20).

Figure 8.20: Alternative strategies to manage CMSSDs respondents



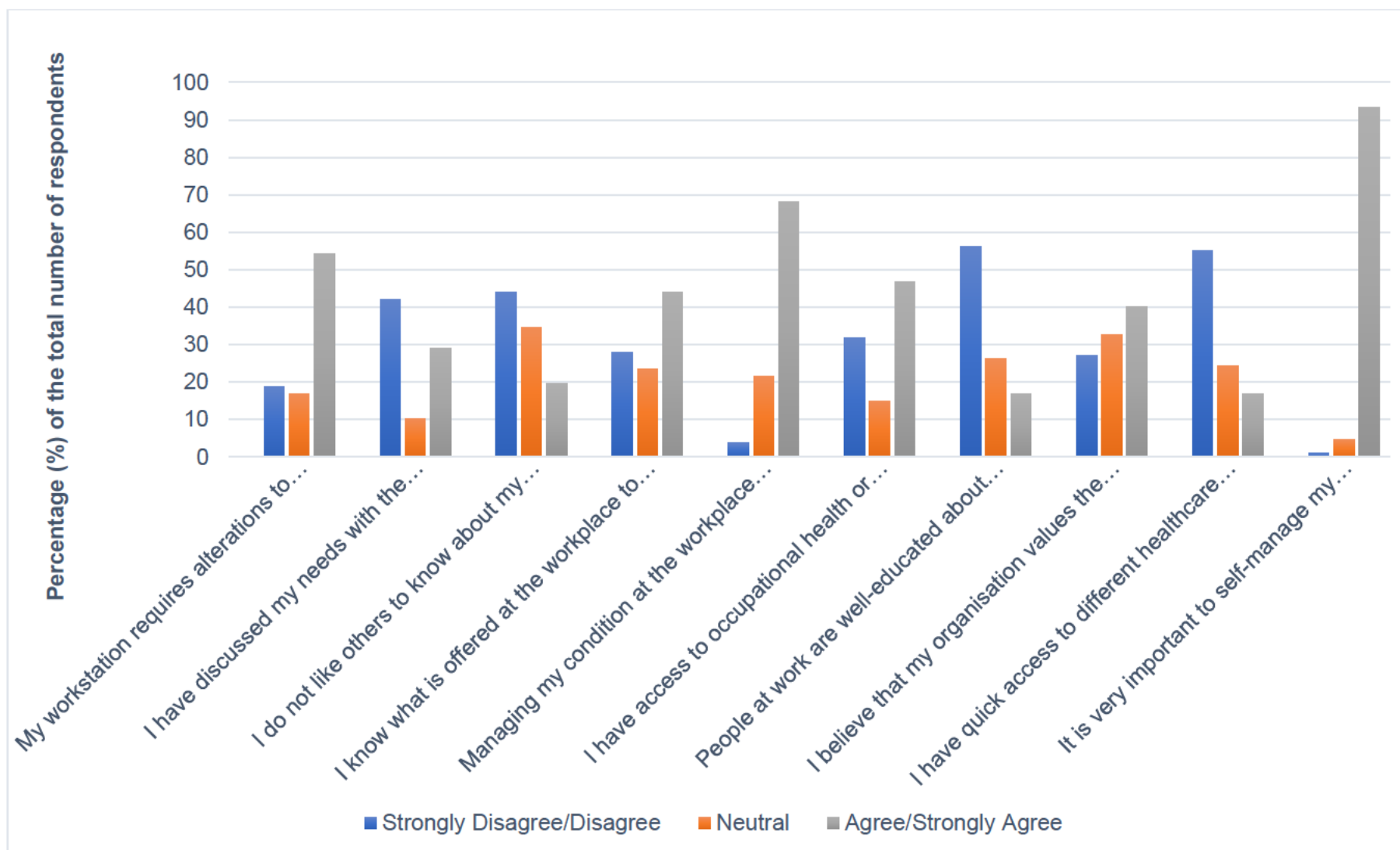
8.6 Factors influencing the management of CMSSDs at work

Respondents were asked to identify factors that influenced how they managed the CMSSD at work (Figure 8.21). In response to the question "We would like to know your thoughts about some factors that can affect how you manage your condition at work", 54% reported that alterations to their workstation were needed to accommodate the CMSSD and 32% indicated that they did not have access to an OHS or other healthcare professionals in the workplace. Interestingly, 42% of those who had access to an OHS had not

discussed their needs with them. Forty-two percent of the respondents did not mind disclosing the condition to others although 56% reported that, in general, people were not well informed about CMSDs. Forty percent of respondents felt valued by their employer and 44% indicated that they were sufficiently informed about the support offered. A large majority (94%) of the respondents declared that self-managing the CMSD was very important to them and 69% recognised that managing the condition at the workplace could potentially reduce the burden on the NHS. Lastly, it was not surprising that 55% indicated that they did not have timely access to healthcare professionals through the NHS. In conclusion, almost all respondents recognised the value of self-management in maintaining their health however appropriate adjustments in the workplace were needed to facilitate their process.

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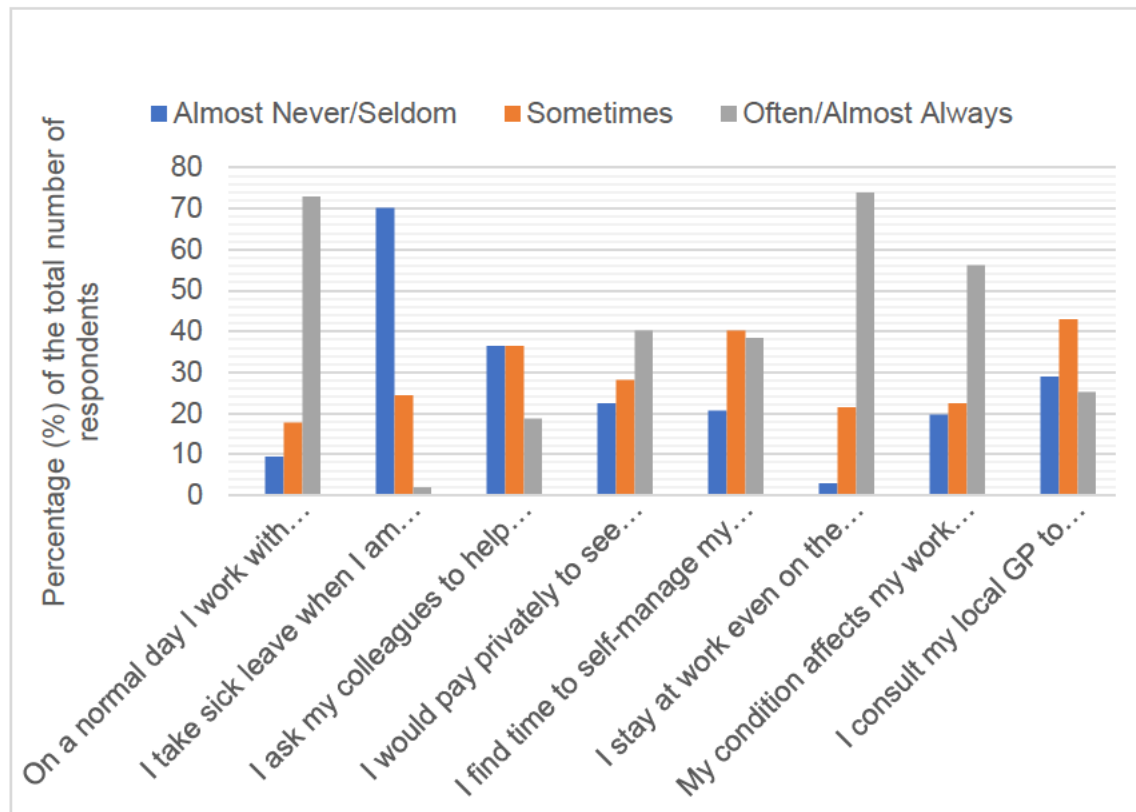
Figure 8.21: Factors influencing management of CMSDs in the workplace



This section of the questionnaire also focused on the general factors that interfere or mitigate an ability to work (Figure 8.22). Seventy-three percent of respondents indicated that they work with ongoing pain or discomfort although 56% recognised that their condition affected their work abilities and performance. Only 20% reported that they would ask their colleagues to help them with a task if they were unable to perform well. The majority of the respondents (74%) reported that they would remain at work even on the days that they felt unwell and only a very small proportion (2%) indicated that they would take sick leave when they were not feeling well. Forty percent would pay privately to see a healthcare professional and 25% would consult their local GP to discuss their health condition. Lastly, 39% responded that they could find time to self-manage the chronic condition.

These findings highlight the issue of presenteeism as most of the respondents would rather stay at work and not take sick leave when they are not feeling well. The correlational analysis showed that respondents who stayed at work on the days they did not feel well would not consider taking sick leave ($r_s(105) = -.445, p < .001$). There was also a negative correlation between employees working with pain or discomfort and the support they got from their employer ($r_s(105) = -.360, p < .001$), their line manager ($r_s(105) = -.195, p < .001$) and their colleagues ($r_s(105) = -.273, p < .001$). Lastly, there was a negative correlation between those who would typically continue to work with pain or discomfort and the time available to self-manage the CMSD ($r_s(105) = -.445, p < .001$).

Figure 8.22: General factors that interfere and mitigate ability to work

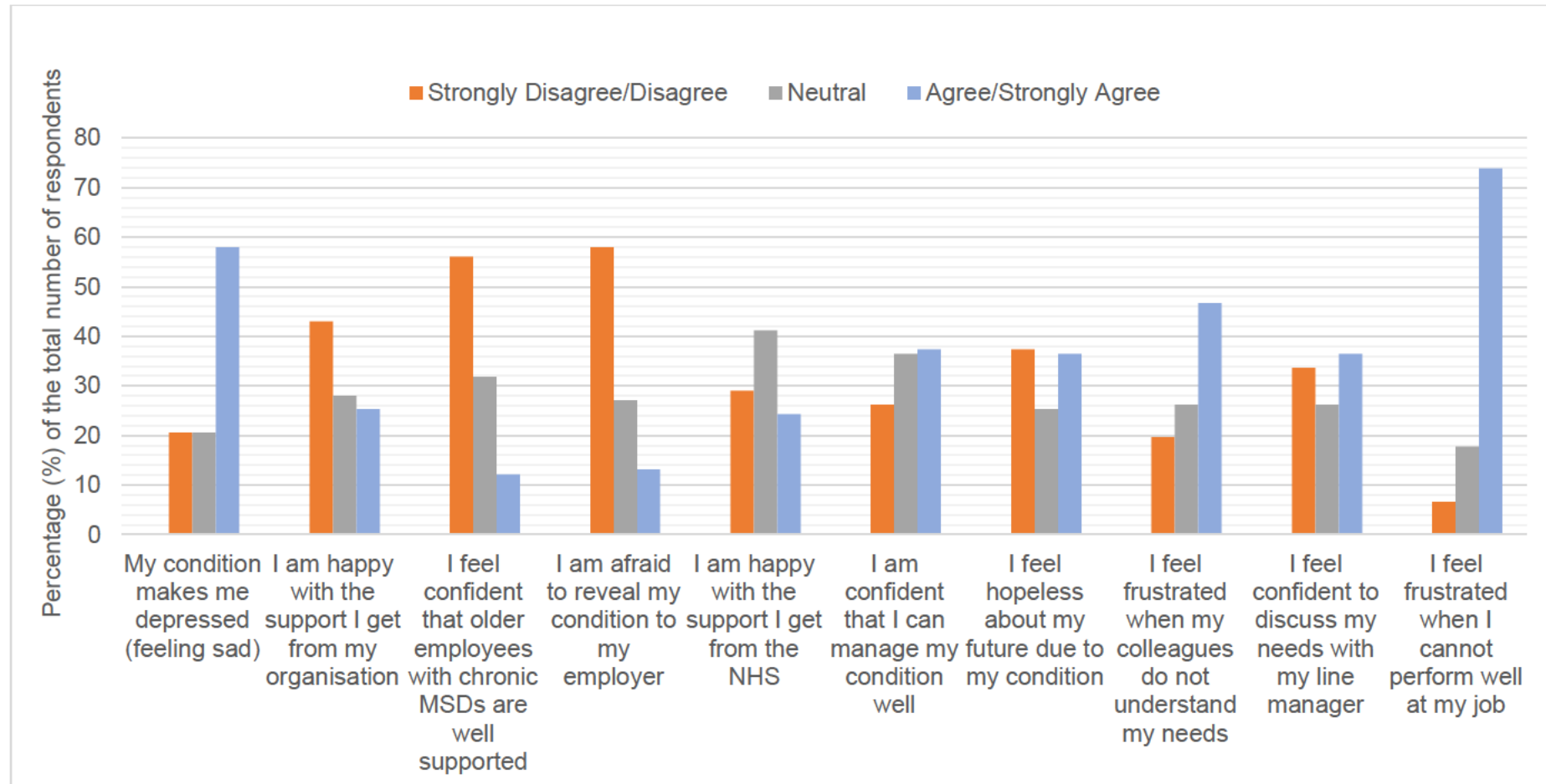


When respondents were asked about their psychological and emotional responses to working with a CMSD (Figure 8.23), 58% indicated that the CMSD caused them to feel sad (depressed) and 37% felt hopeless about their future. A large proportion (74%) felt frustrated when they could not perform well at their job and 47% felt upset when their colleagues did not appear to understand their needs. A small number of respondents (12%) identified that older employees with CMSDs are supported in the workplace and 26% felt happy with the support they got from their organisation to manage the CMSD. Fifty-eight percent declared that they were not afraid to reveal their condition to their employers, and 36% felt confident to discuss their needs with their line manager.

Twenty-four percent were happy with the support they get from the NHS, and 37% were confident that they could manage their condition well. These

findings highlight that respondents valued their work role and the majority felt frustrated when the effect of CMSD meant they did not perform as well as they would have liked. Moreover, there was a medium correlation between those feeling depressed and those not feeling confident in their ability to effectively manage the CMSD ($r_s(105) = -.322, p < .01$). There was also a medium negative correlation between those who previously reported that they were happy with the support they got from their organisation and the decision to stay at work when feeling unwell ($r_s(105) = -.307, p < .001$).

Figure 8.23: Psychological and emotional responses to working with a CMSD



8.7 Retirement plans and the ability to work until the state pension age

The last section of the questionnaire explored opinions about the changes in the retirement age and the state pension age (Figure 8.24). Sixty-two percent of the respondents felt adequately informed about the pension age changes and 47% felt confident that they could manage their finances well until they reached retirement age. However, 50% felt worried, due to their condition, about future employment and 78% declared that these governmental changes would impact their ability to enjoy retirement. A small proportion (29%) of the respondents felt confident that they could work until the retirement age and 40% had a plan for how to manage their condition until retirement. These findings indicate that employees may feel stressed and anxious about their future health and how the SPA changes will affect their retirement plans.

There were strong correlations between those who were worried about their future employment and those who did not feel they could manage their finances well ($r_s(105) = -.506, p < .01$), and between respondents who had a management plan in place and those who believed that they could work until their SPA ($r_s(105) = .405, p < .001$).

Respondents were also asked about their ability to continue the same work until retirement age (Figure 8.25). Half of the respondents (48%) indicated that they would be able to work until their retirement, 18% felt that they would not be able to, and 34% was not sure.

Figure 8.24: Impact of state pension age changes on the ability to work and future planning

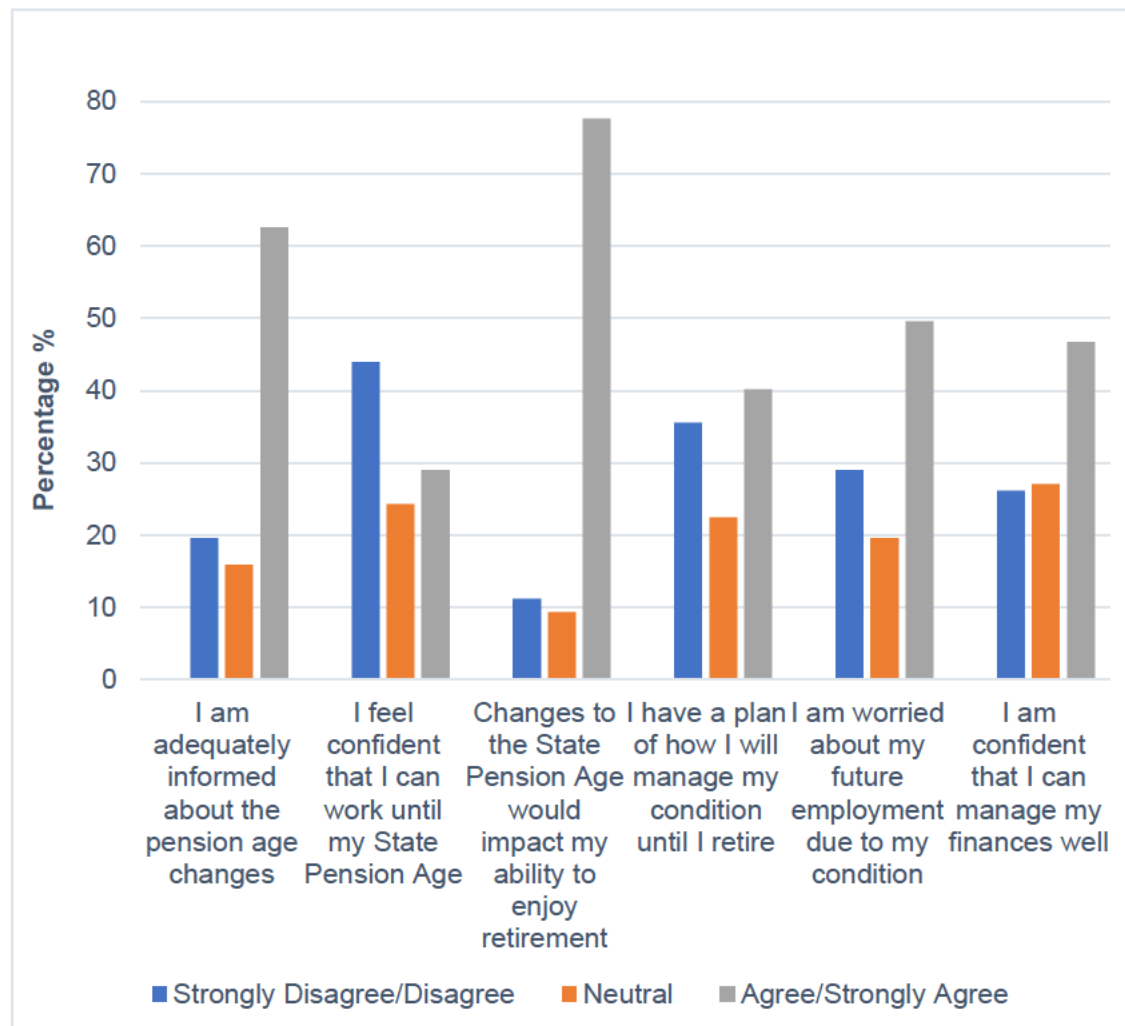
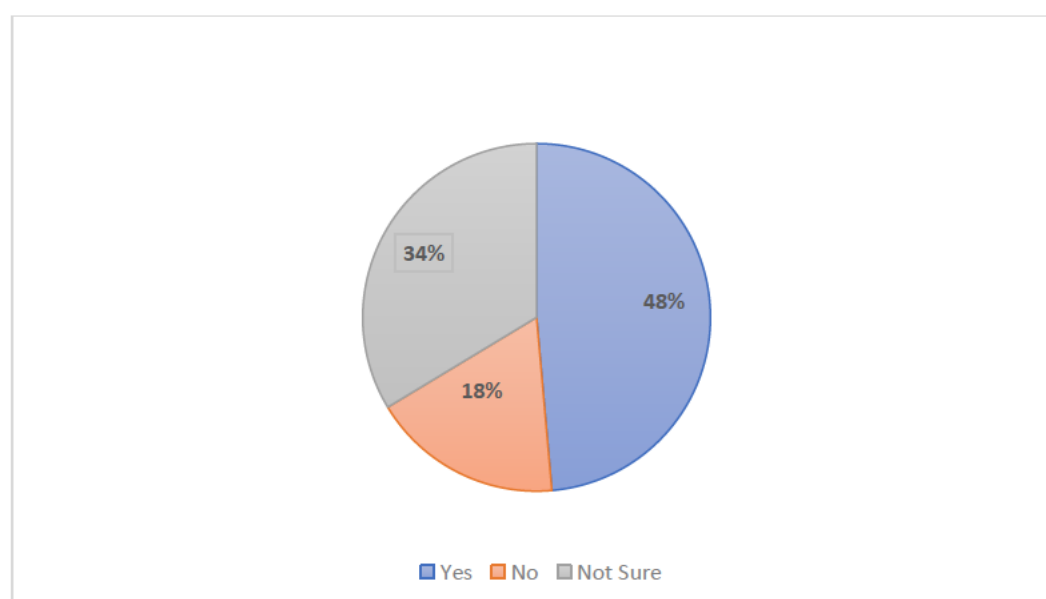


Figure 8.25: Perceived ability to work until retirement



Chapter 9: Discussion of Integrated Findings

9.1 Introduction

This chapter is divided into two parts. In the first part, I discuss the approach I took to integrating the qualitative and survey findings including how a MMR joint display was used to support and demonstrate how integration was achieved. This content has been guided by the principles and practices of integrating MMR (Fetters, Curry, and Creswell 2013) and the steps of creating a joint display using a MMR workbook (Fetters 2020:193-211). In the second part of this chapter, I discuss and explain the integrated findings and present examples of a visual joint display. The integrated findings are then compared and contrasted with relevant research literature to address the complex aim of this study. In this chapter, the terms ‘mix’ or ‘integrate’ and also ‘integration’ or ‘synthesis’ are used synonymously.

PART 1: APPROACH TO QUALITATIVE AND QUANTITATIVE INTEGRATION

9.2 The integration process in an exploratory sequential MMR study

An exploratory sequential approach in MMR most commonly focuses on designing a measurement tool as the outcome of the research. As Creswell and Plano-Clark (2011:71) stated: “*building from the exploratory results, the researcher conducts a second, quantitative phase to test or generalize the initial findings...the researcher develops a quantitative instrument and uses it to assess the overall prevalence of the identified variables.*” In Bazeley's (2018:73) opinion, a tool developed in this way “*often becomes divorced from its first phase foundations*” and the final results are not enhanced by the qualitative data acquired in the first phase.

However, the aim of this exploratory MMR study suggested that the qualitative data could both contribute to the development of a questionnaire in the quantitative phase and explore the phenomena of interest. In this way, a more nuanced and in-depth understanding of employees' experiences could be achieved. As Bazeley (2018:74) stated: *"if understanding gained from inductive qualitative work has guided the design of quantitative instruments, it will also necessarily guide the interpretation of data [obtained using] those instruments"*. This study assigned equal priority to both components and to an integrative process by which the qualitative and quantitative findings were juxtaposed to align or expand the findings.

9.3 Development of the joint display

Integration is a crucial characteristic of MMR (Plano-Clark and Ivankova 2016; Teddlie and Tashakkori 2010) that promotes reflection of how the quantitative and qualitative methods are intertwined. Integration of the findings can be facilitated using a joint display (known also as a matrix) (Fetters, Curry, and Creswell 2013). In this study I used a narrative joint display, in the form of a Table, (see Appendix 9.1) and also used a visual representation to illustrate the integrative process. In this way I synthesised the findings from the qualitative and survey research components to gain a more in-depth understanding of the phenomena of interest. Fetters (2020:194) defines a joint display as:

A table or a figure that can be used for organising mixed data collection and analysis. It represents juxtaposed data collection or findings of qualitative and quantitative strands of a project. It includes or implies specific linkages or areas of commonalities across the qualitative and quantitative strands that can be expressed as constructs or domains and it also contains an interpretation, often called meta-inferences, about the meaning of the two types of results when considered together.

Meta-inferences are the integrated understandings, that “*compare, contrast, or modify inferences generated by the [synthesised] qualitative and quantitative strands*” (Teddle and Tashakkori 2008:300) and that result in new insights to address the study aim and objectives.

Researchers who conduct a MMR exploratory sequential design may choose to start with either the qualitative or quantitative data as a point of comparison in a joint display. In the joint display the qualitative themes were displayed in the first column and used as the overarching concepts for both phases. The contributing categories of the qualitative phase were then displayed in the second column and linked to the overarching themes. In the third column of the joint display, the survey research (second phase) findings were mapped against the overarching themes and the final categories. The fourth column was left blank as it was used for linking the arrows. Lastly, the fifth column comprised participants’ quotes that were also linked to the overarching qualitative themes and categories (see an example of a mixed methods data linking activity in Table 9.1). The next stage was to establish linkages between the quantitative findings and qualitative findings i.e. illustrative quotes (Fetters 2020:203) using a mapping exercise. To achieve this exercise, I searched each contributing category for related quantitative findings and then selected one appropriate qualitative illustrative quote as an example. This was a time-consuming process involving moving backwards and forwards between the qualitative and quantitative data to reveal areas of similarity and contrast. Comparing and contrasting the different component findings is a core stage of the integration process.

Table 9.1: An example of the mixed methods data linking activity

Note: Each coloured arrow links the survey findings with relevant quotes and the thicker arrow shows the selected final quote for the joint display

Overarching themes	Categories	Quantitative findings		Qualitative findings
Employees' approach towards the condition	Work ethic	73% (N=78/107) of respondents indicated that they work with ongoing pain or discomfort		And so what they hear is, "she doesn't want to do that workshop". What they don't hear is, "I don't want to do that workshop because it's, you know, I feel that the lifting and stress of it all is just too difficult" (Annette)
		74% (N=79/107) reported that they would remain at work even on the days they felt unwell		And I think you get like that because you have to be like that. Because if I had taken a day off every time I had pain I'd hardly have worked the last 35 years (Claire)
		20% (N=21/107) reported that they would ask their colleagues to help them with a task if they were unable to perform well.		But if there is like a colleague in the company, you know, some else in the office and i will either ask them to support or ask if they can do it for me. (Sarah)
				Yes, I would work with pain. Because it's been a feature of my life that I've just got used to having, you know. (Sally)
				I don't mind working hard and i do not mind working long regardless how I am (Josh)
				I think the trouble is, when you have a condition like the one I've have all my adult life, you tend to get quite resilient. So if I had a pain in my knee I would still come into work. (Claire)

After identifying and organising the relevant data into columns 1-5, the integrative process continued by looking for inconsistencies, alignments or conflicting findings in order to establish relationships between the qualitative and quantitative data. Fetters (2020:189) suggests that using the labels convergence, complementarity, expansion, and divergence can be useful in structuring the researcher's interpretation of the 'fit' between the findings. These labels were assigned in a final column 'meta-inferences and interpretation'. See Table 9.2 in which the theme 'impact on wellness' is used as an example.

Table 9.2: An example of the narrative joint display with the theme ‘impact on wellness’

Overarching themes	Categories	Quantitative findings	Qualitative findings	Meta-inferences and Interpretation	
Impact on wellness	Work performance	53% (N=57/107) declared poor work ability	I mean I ruined my hands working with no support for about 20 years. That is why I am worse now.(Josh)	Convergence	Participants identified that work ability was affected in diverse levels. This was also confirmed by the quantitative responses.
		60% (N=64/107) reported that the CMSD interfered 'quite a lot/Extremely' with their ability to effectively work during the past six months	I don't know how much it really affects me now. I guess it affected me when I was having to go and have some physio a few times. [before Christmas around 6 months ago] (Kathryn)	Convergence Expansion	Both sets of findings demonstrated that work was affected in the past 6 months. <i>Work ability was affected differently for the employees in the study. The condition fluctuates through the year due to the type of the CMSD, the use of medication, the job role they have and other factors affecting the intensity e.g. stress, depression, comorbidities, flare-ups.</i>

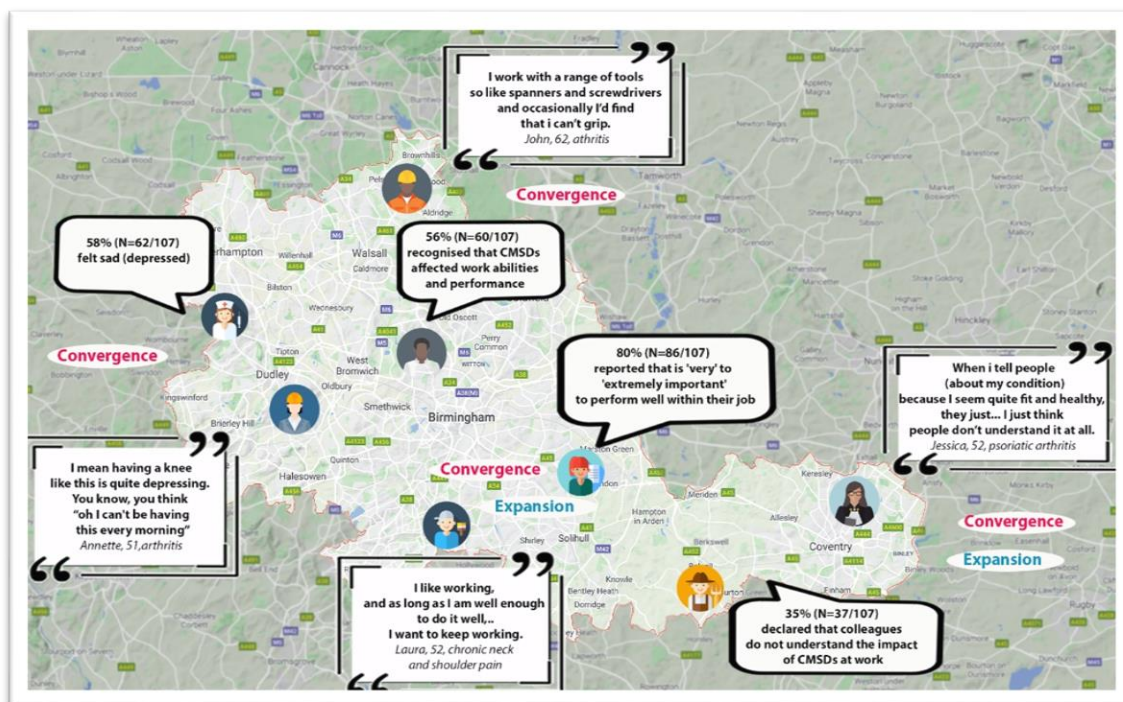
‘Convergence’ describes the agreement between the two sets of findings and ‘complementarity’ occurs when the findings illustrate different but non-contradictory interpretations (Fetters 2020; O’Cathain, Murphy, and Nicholl 2010). ‘Expansion’ occurs when some findings overlap but also provides space for further interpretation (Fetters 2020:189). Finally, ‘divergence’ occurs when the quantitative and the qualitative findings demonstrate conflicting interpretations (Fetters, Curry, and Creswell 2013; Fetters 2020; O’Cathain, Murphy, and Nicholl 2010).

Differences or similarities between qualitative and quantitative findings can indicate an “opportunity for transformation, enrichment, and explanation, which may lead to further understanding of a phenomenon” (O’Cathain, Murphy, and Nicholl 2007:150). The use of the ‘convergence’ and ‘divergence’ labels was straightforward. For example, convergence was utilised to describe the positive alignment between the survey respondents who had a plan for how to manage the CMSD until their retirement and those interview participants who described the arrangements they had made to retire healthy. The ‘divergence’ label was used to address the lack of agreement between qualitative and quantitative findings and to provoke a critique of the forced response / closed questions used in the questionnaire. For example, 12% of the respondents indicated that older employees with CMSDs are supported in the workplace. However, none of the interview participants agreed with that statement. The ‘expansion’ label indicates instances where the qualitative and quantitative data addressed the same phenomenon but in different and informative ways. For example, the survey data revealed that employees with CMSDs discussed their condition with colleagues. However, the qualitative findings explained that

respondents' decisions to disclose are predicated on their perception of colleagues as being empathetic and helpful. The label 'complementarity' was used when new insights or interpretations between the findings were illustrated. For example, qualitative findings suggest that the work required by organisations and employers is likely not to be sustainable as little account appears to be taken of changes, such as, those associated with ageing, increased pension age or new working trends. There were also questionnaire items for which no related qualitative findings could be found and the data generated from these items were labelled as 'no fit'. For example, respondents were asked about the frequency of support they got but none of the interview participants described how often they received support.

Finally, I decided to provide a visual illustration of the synthesised findings using geocoding (Figure 9.1). This is not considered an essential stage of the integrative process, but I felt that a visual display of the story reflected in integrated findings would further help the reader to understand the synthesised findings. The visual display uses the map of the West Midlands where the study was conducted. Graphics were used to represent the employment roles discussed by the study participants and the related survey findings and examples of illustrative quotes are presented in bubbles. For the purpose of maintaining anonymity, the locations of the participant icons are not accurate representations of their places of work. Similarly, the individual pictures do not represent the participants' ages, gender or behaviour. The images have been downloaded from shutterstock.com which offers free creative options.

Figure 9.1: An example of the visual illustration using geocoding



The final stage in the integration process was the interpretation of the synthesised findings. Fetters, Curry, and Creswell (2013) suggest that in MMR a 'contiguous' approach involves the separate analysis and reporting of the qualitative and quantitative findings, whereas a 'weaving' approach involves reporting the findings together on a theme-by-theme basis. A contiguous approach was selected as the data from each phase had been separately analysed and reported in Chapters 6 and 8. This approach also promotes a discussion of the unique contribution of each phase of the MMR study (Fetters 2020:190). As a reminder, both the Arena of Work Disability Model (Loisel 2005) and the Work Ability House Model (Ilmarinen and Ilmarinen 2015) contributed to the interpretation of the findings (Figures 1.2 and 1.3 from chapter 1 repeated below).

Figure 1.2 The Arena in Work Disability Model (Loisel 2005)

This item has been removed due to 3rd Party Copyright. The unabridged version of the thesis can be found in the Lanchester Library, Coventry University.

Figure 9.2: An illustration of the Work Ability House Model taken from the latest published version (Ilmarinen 2019)

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PART 2: DISCUSSION OF INTEGRATED FINDINGS

9.4 Older employees with CMSDs facing uncertainty

Participants who were interviewed in the qualitative phase explained that their condition was unpredictable with variable symptoms and pain that seemed to be beyond their control. They explained the difficulties they faced in carrying out work tasks due to disease activity that often could not be predicted.

Similarly, the survey findings indicated that employees in this study were aware of the physical tasks associated with their work role and responsibilities that they could not perform well due to the CMSDs. Integration showed that flare-ups and other common symptoms affected employment and created uncertainty about employees' ability to fulfil their job requirements. These difficulties led to the interruption of labour activities, (e.g. lifting a load or sitting for a long time at the cashier desk) that were integral to their work role. These findings reinforce the importance of the first floor in the Work Ability House Model (Ilmarinen and Ilmarinen 2015) which represents health and functional capabilities. The first floor is the base that supports the structure of the house and is comprised of health status, lifestyle choices and the prevention or management of physical and mental wellbeing.

Our integrated findings revealed that colleagues who had no exposure to, or knowledge of, chronic conditions were unsupportive even on the days a co-worker experienced a flare-up with more visible symptoms. The non-visible nature of symptoms created uncertainty about the nature of the CMSDs and it made it harder for others also to understand their associated limitations.

Consequently, employees in our study had to cope with both their condition and the negative work attitudes which affected their mental health. The personal system is one of the key areas within the Arena in Work Disability Model (Loisel 2005; Loisel et al. 2001) that encourages an exploration of how social relationships may influence the management of CMSDs in the workplace. It is important to further explore the association of mental health and CMSDs at work with other factors e.g. retirement, life balance, social relationships as research to date has focused mainly on the impact of mental health and CMSDs on sick leave and work-disability (Zhang et al. 2020; Carder et al. 2013; Wynne-Jones et al. 2018b; Baek, Kim, and Yi 2015; Coutu et al. 2011).

These integrated findings emphasise the issue of co-morbidities and especially the link between CMSDs and mental wellbeing in the workplace. This finding was anticipated as mental health conditions are one of the four most common reasons for sickness absence in 2018 in the UK (ONS 2021b) and the co-existence of musculoskeletal and mental health conditions in the workplace is well established (Ervasti et al. 2015; ARMA 2018; Hussey et al. 2012; Zhang et al. 2020; Ree et al. 2019). However, these findings illustrate that employees were anxious or depressed due to employment uncertainty and reduced work performance rather than the condition itself. Although it is necessary to clarify the extent to which mental health conditions drive chronic pain or vice versa (Moreton et al. 2015; Burston et al. 2019), it is also important to explore the confounding factors affecting the relationship of CMSDs, mental health issues and sick leave. Figure 9.2 provides a visual representation (or a visual joint display) of the integrated findings related to the experience of uncertainty.

I work with a range of tools so like spanners and screwdrivers and occasionally I'd find that i can't grip.
John, 62, arthritis

58% (N=62/107) felt sad (depressed)

56% (N=60/107) recognised that CMSDs affected work abilities and performance

80% (N=86/107) reported that is 'very' to 'extremely important' to perform well within their job

When i tell people (about my condition) because I seem quite fit and healthy, they just... I just think people don't understand it at all.
Jessica, 52, psoriatic arthritis

I mean having a knee like this is quite depressing. You know, you think "oh i can't be having this every morning"
Annette, 51, arthritis

I like working, and as long as i am well enough to do it well.. I want to keep working.
Laura, 52, chronic neck and shoulder pain

35% (N=37/107) declared that colleagues do not understand the impact of CMSDs at work

Convergence

Expansion

Convergence Expansion

9.5 Social support in the disclosure and the management of CMSDs

The integrated findings are reflected in the narrative review (Chapter 3) which suggested that interpersonal relationships between older employees and their work colleagues could be negatively affected by colleagues' lack of understanding of the condition and lack of empathy. The findings explained that co-workers were supportive mostly when they were personally involved with an employee who had a CMSD or when they similar personal or family health experiences. Goubert, Vervoort, and Craig (2013) explained how models of empathy depict the way people decode someone else's painful condition using a 'bottom-up' and a 'top-down' process. Being empathetic depends on both these processes in that a 'bottom-up' process relates to the incoming information available to the observer e.g. someone moving with difficulty, whereas the 'top-down' process depends on the personal or shared experiences of pain and the perceived beliefs about the pain intensity. Empathy relates to the ability to understand another's emotional state and have a feeling of care for their wellbeing (Decety et al. 2016). The relationship between social support and empathy in the workplace needs to be explored as developing these skills will allow co-workers to support those with CMSDs.

In this study, the perceived lack of support and colleagues' attitudes towards the CMSD also affected employees' decisions about whether to disclose the condition (Figure 9.3). Employees in both study phases were frustrated and distressed when others doubted the reality of their condition and its impact on their work performance. They trusted their work abilities, valued their job role, and were determined and motivated to perform well at work. The

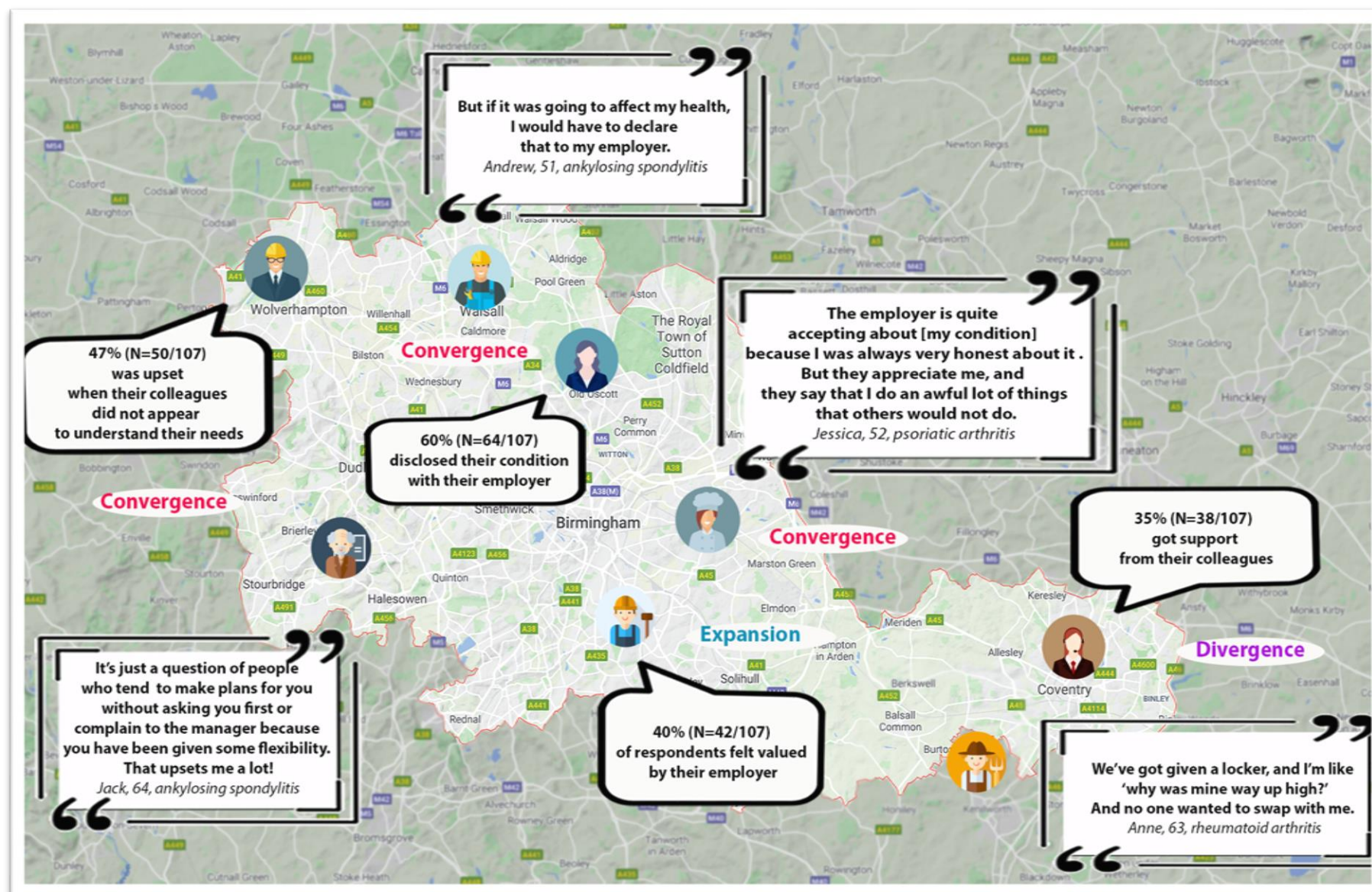
qualitative findings explained that older employees chose not to disclose and discuss their health issues with their colleagues' because they wanted to avoid gossip and scepticism. These findings are supported by Smith and Brunner's (2017) survey study (N=103) which explored the reasons behind employees' decisions on disclosure. Their main results revealed that organisational culture and relational considerations may shape the environment for or against disclosure. The authors suggested that building trust and educating others about health conditions could positively influence disclosure (Smith and Brunner 2017). The experience of communication issues at work may explain why, in our study, employees chose to hide their symptoms and not ask for support from colleagues unless it was absolutely necessary.

Employees' decisions to disclose the CMSD to the management team would seem to depend on their ability to work and also their current and previous experiences of support within the organisation. The issues of sustaining employability and the role of co-workers in helping others manage CMSDs in the workplace have not been consistently explored or incorporated in policies. However, studies focused on the return-to work (RTW) process do identify the importance of the co-workers' role in the re-entering of an employee, after sick absence or a work-related injury (Frank 2016; Tjulin et al. 2011; White et al. 2019). These integrated findings are reflected in the personal system within the Arena in Work Disability Model (Loisel 2005; Loisel et al. 2001), and explained by the Work Ability House Model (Ilmarinen and Ilmarinen 2015). The 4th floor in the house represents work-related content, including organisation and resources, work environment and the leadership team. A staircase connects it to the 3rd floor which represents workers' experiences and perceived

work ability. Positive and negative experiences at work affect workers' values and attitudes and may decrease their connection with the factors represented by the 4th floor.

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Figure 9.4: A visual joint display of the integrated findings on ‘social support and disclosure’



9.6 Presenteeism: Why do employees come to work when unwell?

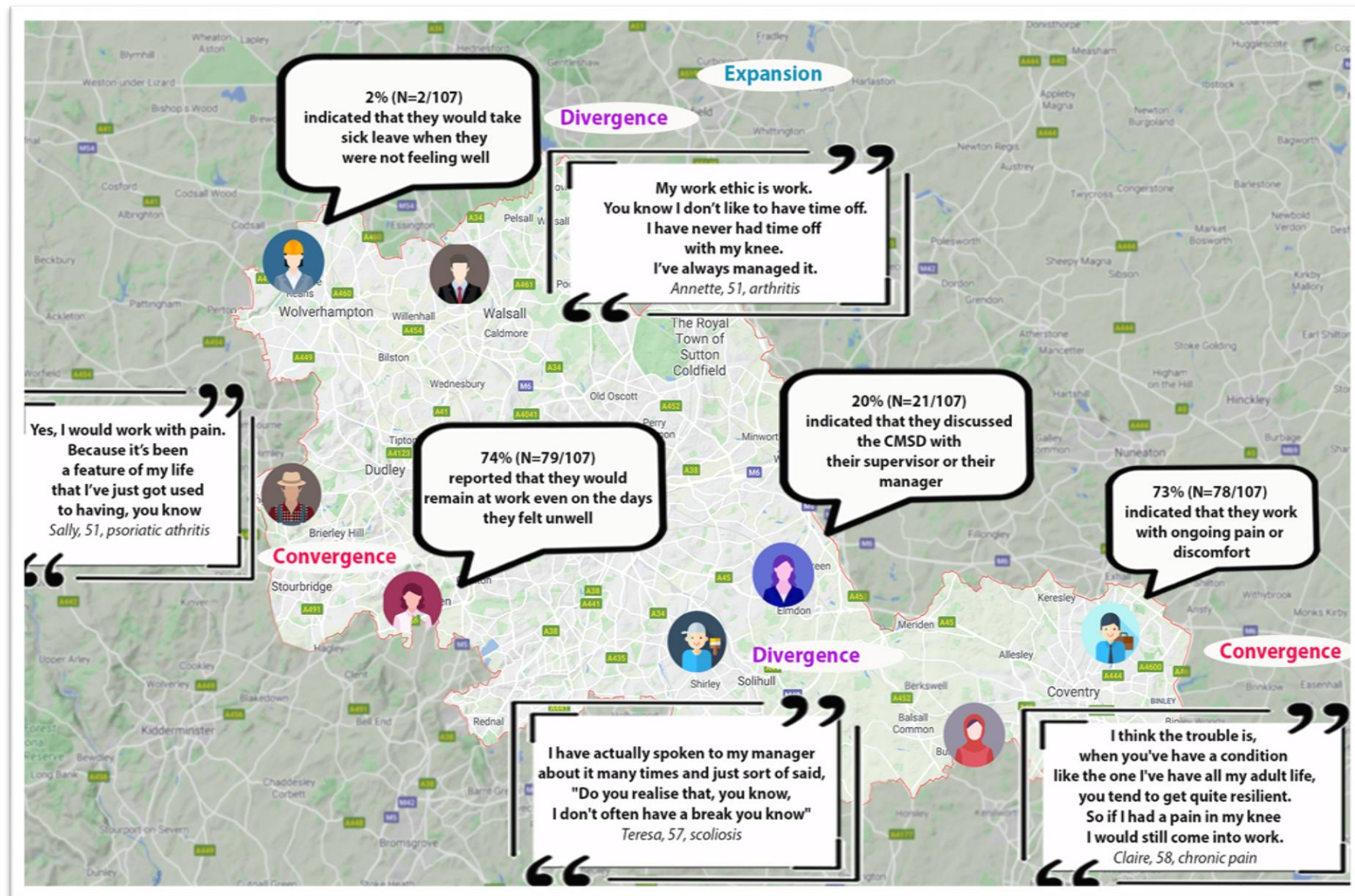
The integrated findings suggested that employees, who participated in this study, had assimilated the CMSDs into their personal and work lives. They often continued to work while feeling unwell, as they considered this ‘normal’ for them. They rarely took sick leave particularly if the management team was perceived as unsupportive. The behaviour of staying at work while not feeling well reflects the phenomenon of presenteeism (Chapter 1). The challenging nature of the relationship between the employee and the management team is particularly important as it influences the distribution (or not) of resources that can support employees’ health (Gregersen, Vincent-Höper, and Nienhaus 2014). According to Erdogan and Bauer (2015:641), the management team or organisational leader can *“influence employees [members] in their group through the quality of the relationships they develop with them”*. However, no research has to date specifically explored the processes that lead to a ‘poor’ relationship or contribute to a ‘good’ relationship between managers and older employees with CMSDs.

The integrated findings highlighted the different intrinsic (I) and extrinsic (E) factors that ‘drive’ older workers to presenteeism (Figure 9.4). The intrinsic factors are determined by the individual and therefore are more under employees’ control, for example, resilient behaviour, depression, work ethic and attitude towards disclosure (Kinman and Wray 2018; Miraglia and Johns 2016; Garrow 2016). On the other hand, ‘extrinsic’ factors are more complex and they are usually influenced by the environment, for example, pressure from colleagues and managers, job demands and financial insecurity (Kinman and

Wray 2018; Miraglia and Johns 2016; Garrow 2016; Gosselin, Lemyre, and Corneil 2013). The study findings identified a number of intrinsic and extrinsic factors, such as feelings of guilt (I), prejudice (E), loyalty to the employer or colleagues (E), personal financial pressures to support the family (I and E) or a desire to be viewed as conscientious at work (I). Because presenteeism is highly responsive to the relationship between the individual (I) and their work environment (E), it is important to understand how these factors influence presenteeism decisions and explore the ways to moderate its effects on musculoskeletal health and performance.

Employees in our study were motivated by a strong work ethic to stay at work and a desire to fulfil their job responsibilities even when feeling unwell. The qualitative findings of our study helped to elucidate why some of these factors may motivate presenteeism in the workplace. For example, working in an understaffed organisation or having specialist qualifications influenced participants' decisions to remain at work. As Kinman and Wray (2018) suggested, dedication or working under high demand conditions may encourage people to stay in the workplace when feeling unwell due to concerns that their work will remain undone. The authors surveyed employees (N=6,874) in colleges and universities in the UK and reported that university academics would often work while unwell. Their results suggested that commitment to work might be considered a risk factor for presenteeism. Being dedicated at work may reflect a positive attitude towards the organisation and its values, however, it appears that it may also encourage presenteeism and mitigate against absenteeism (frequent absence from work).

Figure 9.5: A visual joint display of the integrated findings on 'presenteeism'



The integrated findings showed that organisational issues, related to the employers or their representatives (i.e. managers, supervisors, leadership team), such as, poor communication, lack of sick pay, long working hours culture and a general lack of understanding of CMSDs, also contributed to presenteeism. The findings also highlighted that presenteeism was significantly higher for employees who were 'ignored' by the management team. In these situations, employees lost confidence in the employer's or manager's ability to make substantive changes in the work environment and develop a management plan with them. Similar issues were identified in earlier qualitative (Hutting et al. 2014; Carder et al. 2013; Coole et al. 2010; Wynne-Jones et al. 2011) and quantitative studies (Dietz and Scheel 2017; Duff et al. 2015; Dietz et al. 2020) that explored communication issues between the members of the management team and employees with CMSDs. It is important for employers and managers to recognise these challenges and identify the different support needs of employees with CMSDs.

These findings related to presenteeism can be supported by both the Work Ability House Model (Ilmarinen and Ilmarinen 2015) and the Arena in Work Disability Model (Loisel 2005; Loisel et al. 2001). The 3rd floor in the Work Ability House Model depicts the inner values and attitudes of the older employees and indicates the factors, such as, personal values and work ethic that may motivate them at work and strengthen their work-life. However, organisational issues and pressure represented by the 4th floor (management team and work community) may weaken these values and deteriorate their work ability. The workplace system and the legislative system depicted in the Arena in Work Disability Model (Loisel 2005; Loisel et al. 2001) can also be associated

with presenteeism. Workplace culture and strict absence policies may reinforce employees' maladaptive behaviour (Ocampo et al. 2020). These strict policies may be associated with the company's legal system and compromise the rights and responsibilities established between employers and older workers. For older employees who are motivated to take sick leave, these systems may facilitate the management of CMSDs or present significant barriers to the development of effective strategies. Also, these systems can encourage presenteeism in those employees who are motivated, by personal or psychological reasons, to stay at work unwell.

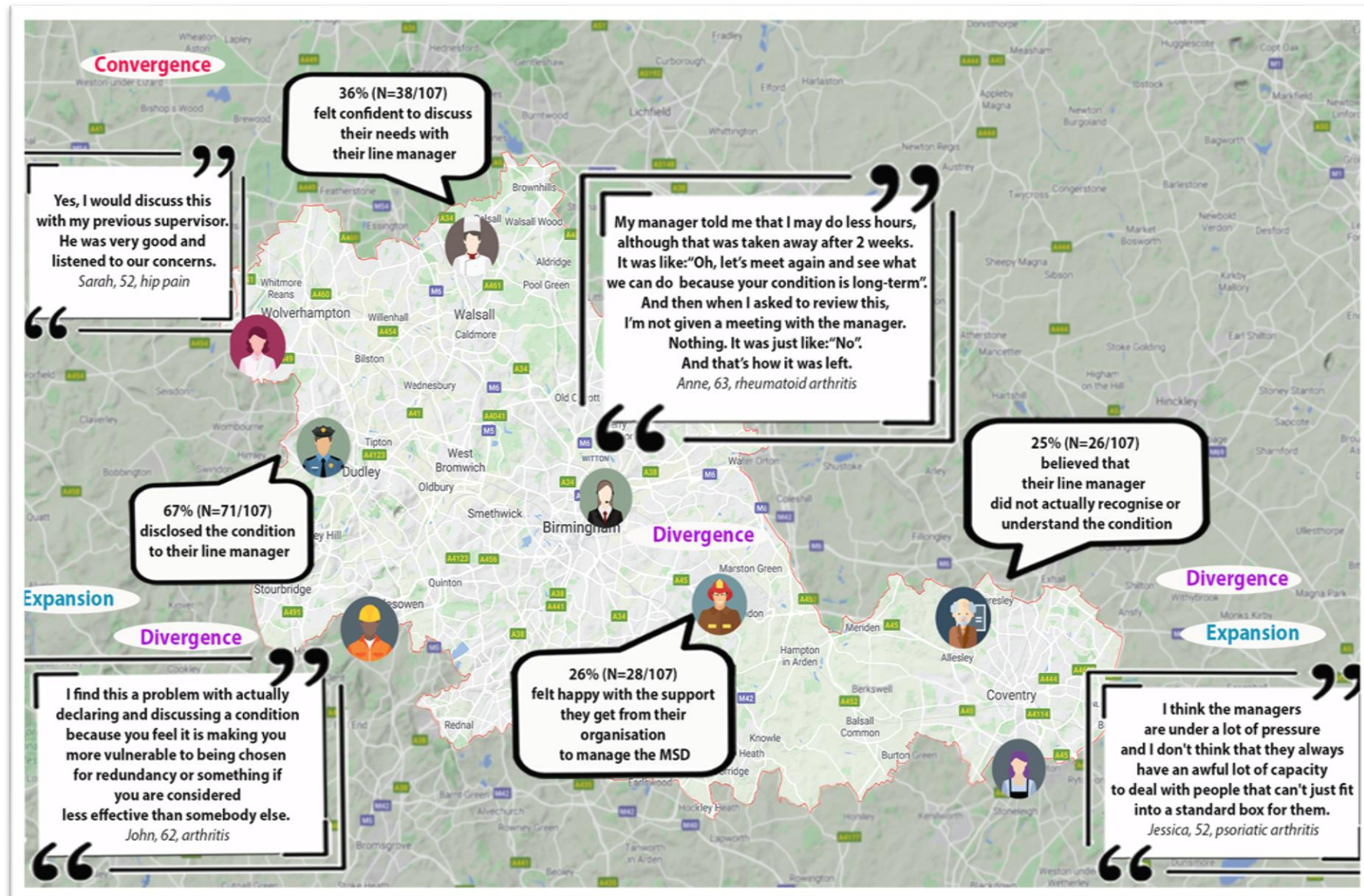
The process of disclosing a chronic condition by older employees may not be a linear one because of the challenges such a process may entail. For example, the qualitative findings helped to elucidate that those who did not disclose their CMSDs were often vulnerable to prejudice due to disbelief or judgmental behaviour about their work abilities. Others were exposed to a negative or challenging work environment where they were discriminated against by their employer or believed that they were at risk of being labelled by their colleagues as lazy or unreliable. Research has highlighted that employees with chronic diseases are vulnerable to discrimination and they have to cope with both the symptoms of their condition and colleagues' or manager's attitudes towards them (Silvaggi et al. 2020; McGonagle et al. 2016; Grant et al. 2019b; McGonagle and Barnes-Farrell 2014). As discrimination can be motivated by prejudice (Pager and Shepherd 2008) employers need to acknowledge that stereotypes exist and the threat of being stereotyped may have a negative effect on the older employee. Therefore, raising awareness in

the workplace may benefit the ageing workforce with CMSDs and create a proactive work environment that discourages judgemental attitudes.

The integrated findings also indicated an association between disclosure, discrimination and presenteeism (Figure 9.5). Examples provided by employees in the qualitative phase suggested that employers made assumptions about employees' work ability or used the CMSDs as an excuse to not promote them into roles with more responsibilities. Similar issues have been raised in previous studies (Summers et al. 2018; Capell, Tzafrir, and Dolan 2016; McGonagle et al. 2016). These authors identified that employers' chose not to employ someone with a CMSD, and when they did, they were treated differently to other employees or assigned to undervalued tasks and their work progression was blocked. This behaviour can occur despite the current disability discrimination legislation (Equality Act 2010) that addresses workplace discrimination. It also contributes to the perception that people with CMSDs do not have the same work opportunities as those without chronic illness (Brault 2012; McLaughlin, Bell, and Stringer 2004; Bonaccio et al. 2020). Such perceptions may influence the decisions that employees with CMSDs make to hide their condition and keep working even when they are not feeling well.

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Figure 9.6: A visual joint display of the integrated findings on ‘factors affecting presenteeism’



9.7 Presenteeism in employees with chronic inflammatory disorders

Employees in our study described CMSDs that had common characteristics such as joint pain, stiffness, sleep disturbance or reduced mobility which are commonly associated with chronic inflammatory disorders (CIDs). CIDs can be very disabling, for example, they can lead to complex symptoms due to intermittent flare-ups and progressive joint destruction (Fitton and Melville 2019; Stanhope et al. 2012). The impact of CIDs on older employees' ability to work varied from one individual to another in our study. The heterogeneous clinical presentation of CIDs makes management of these conditions challenging for both male and females employees (Brennan-Olsen et al. 2017; Duffield et al. 2017). Personal factors such as age, gender, or health may affect the management of CMSDs as depicted by the Arena in Work Disability Model (Loisel 2005; Loisel et al. 2001). A causative relationship between the specific effects of CIDs and presenteeism has not been established but there is some evidence to suggest that they influence the behaviour of presenteeism (Hammond et al. 2020; Holland and Collins 2016; 2020).

In this study, employees with CIDs were aware of the progressive nature of their disease and had experienced intermittent flare-ups. However, the findings indicated that they did not use their sick leave when unwell even though their ability to work was affected. The qualitative findings revealed that employees were concerned about disciplinary actions after reaching their maximum sick leave allowance and felt that frequent absence would be negatively evaluated by the employer. These attitudes towards sickness

absence may related to the nature of the CIDs and the sick leave policies. As absenteeism can be a significant threat to productivity, staffing, costs and employee morale (Strömberg et al. 2017; Jinnett et al. 2017), employers may discourage the frequent or long-term absence from work using strict sickness absence control procedures (Higgins, O'Halloran, and Porter 2012; Wynne-Jones et al. 2011; Miraglia and Johns 2016). Miraglia and Johns (2016) provide important guidance in interpreting our findings as they suggest that employers may see presenteeism as an expression of the employees' commitment to work and, as a result, they might explicitly or implicitly reward it.

9.8 The phenomenon of leaveism

The integrated findings revealed that employees in our study frequently chose to use their annual leave as a strategy to manage their CMSD. This was described in the qualitative phase as a response to strict organisational absence policies that limited their use of sick leave or as a strategy by which they hid their symptoms from colleagues and managers. The phenomenon of leaveism may offer an explanation for these consequences of organisational policy and culture. Leaveism has been defined as *“a situation where an employee uses their own time, to avoid the workplace when they are unwell, or take at home work to complete outside contracted hours due to the sheer volume asked of them”* (Hesketh, Cooper, and Ivy 2014; Hesketh and Cooper 2014). Studies, conducted by these authors, indicated that employees used annual leave, time in lieu and other leave entitlement schemes instead of their sick leave, taking time off when not feeling well or when they had nearly reached their maximum sick leave allowance.

There is a small but growing interest in exploring the impact of leaveism on employees' physical and mental health. However, to date, only one study (Gerich 2015) appears to have directly addressed the issue of leaveism and discussed how research could contribute to understanding employees' experiences of leaveism in the workplace. In this survey study, conducted in Austria, 930 questionnaires were administered with a response rate of 31%. Based on the study findings, Gerich (2015) suggested that leaveism [like presenteeism] was linked with employees' fears of losing their jobs or failing to get a promotion due to their sick leave rates. The findings also indicated that employees who reported leaveism experienced more restrictive attendance policies in the workplace or were allocated higher work overloads. As absence policies and excessive workload may have an impact on the wellbeing and the work-life balance of employees with CMSDs, it is important for both employers and employees to become aware of this phenomenon.

The findings on leaveism could be interpreted in the Work Ability House Model (Ilmarinen and Ilmarinen 2015) as the culture of the workplace and the strict absence policies can penetrate to the 3rd floor and affect the attitudes of older employees towards the use of annual leave instead of sick leave. It is also worth noting that the term 'leaveism' was first discussed in the literature by Gerich (2015) and in 2018 it was, for the first time, included in the annual Health and Wellbeing at Work Survey (CIPD 2019b). When I started this study in 2016, I was not aware of this phenomenon and, as a result, I did not explicitly explore it in the qualitative interviews or include any items related to leaveism in the questionnaire. However, some survey respondents in a short answer question identified the use of annual leave as a strategy to manage CMSDs. In contrast

to the phenomenon of presenteeism, leaveism has had, to date, limited scholarly or research attention and further research is required.

9.9 The impact of state pension age changes on retirement

In this study, most employees were aware of the governmental changes concerning the state pension age and retirement age (Chapter 1). However, the integrated findings revealed the uncertainty and frustration older employees felt about the reforms and illustrated how the ongoing changes could impact their ability to enjoy life after retirement. Health is a major factor influencing the decision to retire early (Brown and Vickerstaff 2011) and the findings highlighted the importance attributed by employees to retiring while still well. Many of the older employees who contributed to this study expressed concerns about their health and their ability to work until their new official retirement date. The qualitative findings revealed that they were also worried about managing more than one chronic condition, the CMSD and, for example, diabetes or hypertension. Others felt pressured, after the SPA changes, as they felt that the work intensity had increased and that their workplace security could decline due to open competition for positions with younger or healthier employees (Figure 9.6). Employers need to understand that SPA changes will impact older employees who may find it hard to meet the demands of their work, particularly if their health deteriorates or they wish to exit employment in order to pursue other interests (Andersen, Jensen, and Sundstrup 2020).

Similarly, the integrated findings illustrated how financial considerations influenced employee's decisions about early retirement or remaining at work. Financially secure employees had a retirement plan in place and were planning

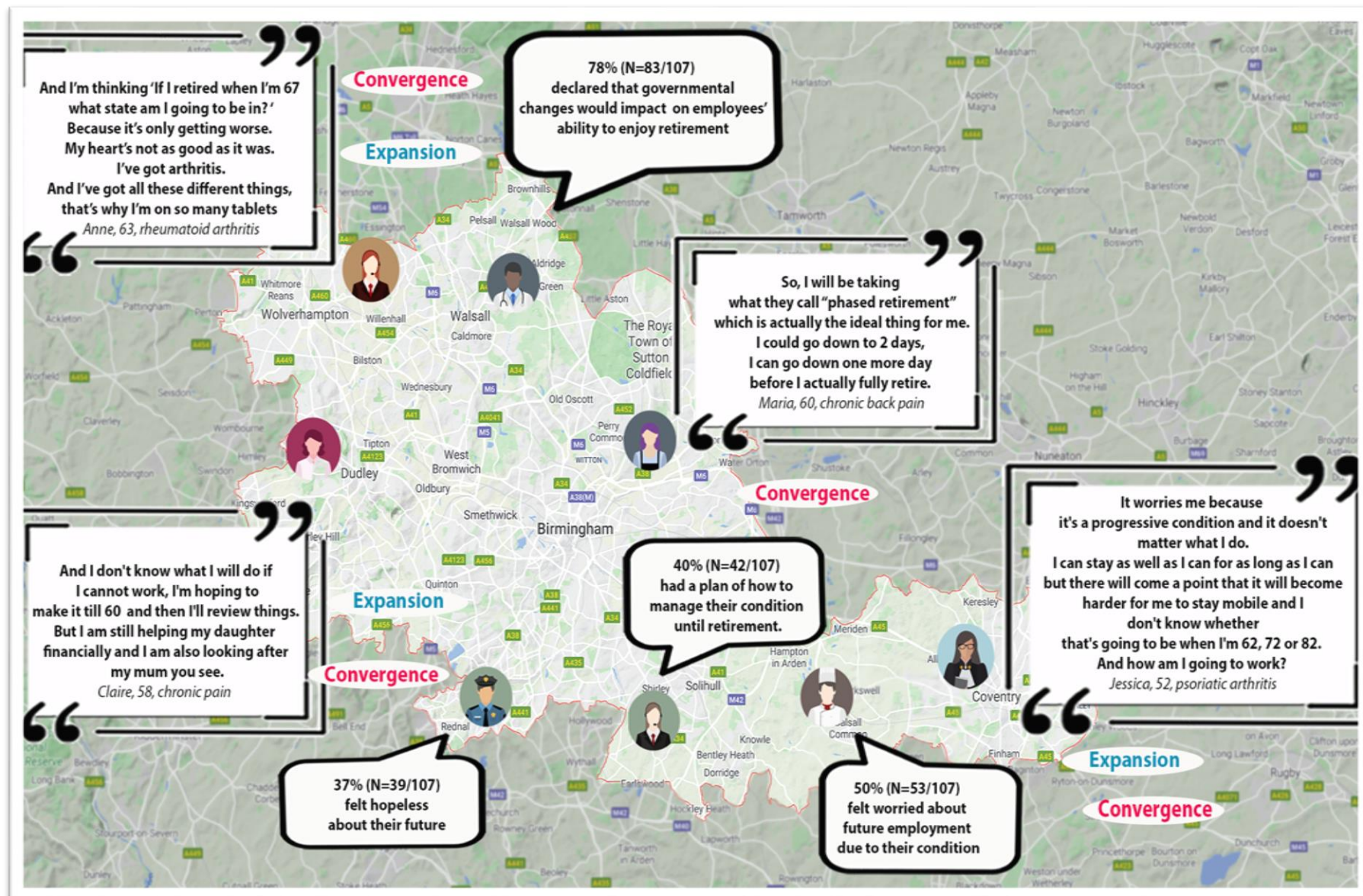
to retire early. In contrast, early retirement was not possible for those who had not been able to acquire sufficient financial resources. The qualitative findings helped to elucidate that older employees who had reduced work ability were forced to stay in the job due to extrinsic factors such as economic dependency related to supporting children, repaying bank loans or mortgages or because inadequate retirement plans had been made. An older survey research study (Schofield et al. 2011) may help to shed light on these findings. The authors explored the relationship between early retirement due to LBP and wealth accumulation in Australia using the 'Health and Wealth MOD' database. Their findings highlighted the importance of working between the ages of 45-65 as, in this age range, people accumulate most of their savings and wealth. The authors explained that early retirement could cause financial stress, income loss and forced decisions that could potentially impact other family members.

The Work Ability House Model (Ilmarinen and Ilmarinen 2015) illustrates the variety of factors that influence the decision to work until retirement or exit early from employment. The governmental changes are represented outside the house, in the external operational environment, and cannot be avoided. Hence, it is important to maintain an equilibrium between the floors as a stable internal operational environment will support the work ability throughout a person's work-life. Ageing may affect the first floor of the work ability house as older employees with CMSDs may experience more than one chronic condition (comorbidities or multimorbidities) that need to be managed. Ageing and reduced health can change workers' resilience and use of resources and disturb the balance within the house. Therefore, the managers and employers can support the ageing workforce by developing and organising those factors

represented by the 4th floor to reflect and support the abilities, skills and state of health of the ageing workforce. As the 3rd floor represents the employees' perceptions about themselves and their work ability, a balance between the resources and needs of older employees on these floors is a prerequisite to extending working lives. The findings of this study reinforce elements of this model and highlight how important it is that employers support older employees with CMSDs in staying active and productive by developing and implementing management practices that will enhance sustained employability of these employees.

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Figure 9.7: A visual joint display of the integrated findings on the ‘impact of state pension age changes on retirement’



9.10 Changes in the state pension age and women with CMSDs

The retirement age has changed for both men and women, but women have been generally more affected as they are facing delays in accessing their pensions of between 6-8 years. Women in our study were born between 1957 and 1968 and most of them worked in the healthcare and education sectors. The study findings are consistent with recent literature suggesting that the SPA changes have disadvantaged older women (Carrino, Glaser, and Avendano 2020; Trades Union Congress et al. 2016; Thurley and McInnes 2020; Copsey and Schneider 2018; de Grip, Lindeboom, and Montizaan 2012; Pensions Policy Institute 2019; Holman, Foster, and Hess 2020).

The integrated findings illustrated that women questioned their ability to make the last-minute adjustments required by the new retirement age since planning for retirement often entails decisions about work, family commitments, pension changes, or early retirement options. In the qualitative interviews, the female participants discussed how they had not planned to stay at work for potentially eight more years and revealed the anger and frustration they experienced about the SPA reforms. They felt stressed about family responsibilities, such as caring for elderly parents and older spouses with increasing health problems, looking after grandchildren or supporting financially their unemployed children who were studying or were low on the property ladder. Although most of the female employees in our study indicated that they had been informed about the SPA changes, it was less clear to all of them how these changes would affect them over the longer term.

The integrated findings suggested additional factors that contributed to a

sense of loss of control in both personal and working lives of older female employees. Findings indicated that these women assumed the caring roles within the family and that this affected their health and the quality of their personal lives. These findings, and the role of family and their immediate social environment, can also be discussed in relation to the Work Ability House Model (Ilmarinen and Ilmarinen 2015). Family is illustrated in the front yard of the model and the association between the social environment and employees' work ability on the balcony of the 3rd floor. Although family and immediate environment can support the older employee (Pérez, Alcover, and Chambel 2015) other family-related issues and responsibilities may negatively affect the worker's health (ONS 2019c). These factors include informal care duties for older parents or children.

The Office for National Statistics (2019c) examined data from the English Longitudinal Study of Ageing in order to explore the association between the different types of care and employment. Almost one in four female workers had informal care duties compared to just over one in eight male workers. The report also suggested that, compared to men, women who had already adapted their life to look after children might be more likely or expected to adopt other caring roles such as, looking after grandchildren or caring for their parents (ONS 2019c). These responsibilities could be particularly challenging for the older female worker and a gender-related dimension in both governmental and organisational policies is needed to address the impact of the SPA changes on women who are informal carers and manage CMSD in the workplace. Policies aimed at extending the working lives of women need to take into account the care responsibilities of those over 50 years old.

The integrated findings also revealed that due to the SPA changes women employees were not in a financial position to take early retirement, as they were unable to acquire sufficient financial resources to support their plans. In the qualitative interviews the women participants explained that they were frequently required to take time away from work or work part-time as they had to raise their children or care for relatives. Women usually compromise their career when the needs of children and other family members conflict with work (EU-OSHA 2016; Sharma, Chakrabarti, and Grover 2016; Heise et al. 2019). For example, a Pensions Policy Institute Report (2019) stated that working pattern changes are the biggest factor contributing to the gap between the pensions of women and men. In addition, only a few noticeably positive changes were made over the long-debated issue of the gender pay gap (Ortiz-Ospina and Roser 2018).

The Pensions Policy Institute Report (2019) indicated that women are still paid on average 18% less than men in all occupations and, as a result, they accumulate one-third of the pension that a man acquires by the age of 60. Working part-time could be seen as a good solution for female employees in our study who were managing a CMSD at work and focused on remaining healthy and fulfilling other life responsibilities. However, working pattern changes can become a challenge as they may decrease financial capacity and pension contributions and, in reality, limit the access of women to early retirement options (ONS 2018b; Trades Union Congress 2014; Andersen, Jensen, and Sundstrup 2020).

9.11 Roles and responsibilities of employers in supporting employees managing CMSDs

The integrated findings illustrated the importance, attributed by older employees, to maintaining a good work-life balance. In addition to the involuntary nature of the SPA changes that were imposed, without consultation, by the government, older employees had not realised how the CMSDs, as they got older, would progressively affect their ability to fulfil their work role. Employees in this study were motivated to continue to work, therefore, being healthy was essential for them. Government initiatives, discussed in Chapter 1, to enhance work welfare and extend healthy working lives may pave the way for a healthy workforce (DHSC and DWP 2017).

However, the government has not put in place the necessary infrastructure and resources needed to implement these initiatives in any practical sense, and they are generally perceived as merely a revamp of previous policies (Robertson 2017; Trades Union Congress et al. 2016). Hence, enhancing the wellbeing of the ageing workforce requires a collaborative commitment on the part of government, employers, managers, and employees at all stages of the life course (Walker and Maltby 2012).

Our findings highlighted the employer's key role and responsibilities in helping older employees with CMSDs in the workplace (Figure 9.7). For example in the qualitative phase, employees explained the different ways they felt supported, and discussed the strategies offered by their employer to control their symptoms whereas, in the quantitative phase, employees selected various strategies that were offered and indicated their effectiveness and importance for managing their CMSD. Employees who were offered work adjustments were

satisfied with the way their employer and manager supported them in managing the condition at work. However, the strategies offered were subject to the size and the type of the industry, the job role, the organisational policies, and acknowledgement of the impact of CMSDs at work. Thus, employees who participated in our study had also taken the management of their condition into their own hands.

Although several governmental funding schemes are available for employers to assist the retention of older employees and those with a disability or a long-term condition (DWP 2020d), findings suggested that not all employees in our study had been offered these schemes by their employer nor had they heard about them. These findings suggest that the employers involved were either unaware of the schemes or did not understand that employees with CMSDs were eligible to apply. Indeed, the Department of Health and the Department for Work and Pensions (2017:25) stated that “*employers found government’s information fragmented and difficult to access*”. However, there is still a missing link between guidance and implementation, as exemplified by statements like “we will improve advice and support both at a national and local level” and “we will start by researching and identifying potential solutions with employers” which are, in reality, not detailed or specific enough to be understood and applied by the employers.

The integrated findings showed that most employers did not signpost employees to relevant services even though they have been encouraged to consult healthcare professionals or engage occupational health services in their company (Department of Health and the Department for Work and Pensions 2017; NICE 2015; NICE 2019; Department for Work and Pensions 2017b). One

explanation could be that the government's suggestions did not demonstrate a clear understanding of the OHS role or did not provide a concrete plan for the establishment of accessible OH provision. For example, the Department of Health and the Department for Work and Pensions (2017:44) report stated that *“an expert working group on occupational health will be appointed to champion, shape and drive a programme of work and take an in-depth look at the OH sector”*. This statement is not specific enough to provide clear guidance that can be applied by employers. Despite the importance of maintaining the health of the ageing workforce, there is still no legal requirement for employers to provide ergonomic assessments in the workplace or vocational rehabilitation through, for example, the provision of occupational health services.

In addition to the government's plans, national bodies e.g. the National Institute for Health and Care Excellence (NICE 2019; NICE 2015) and independent organisations, such as Business in the Community and Public Health England (2019), have published recommendations and guidance to empower employers to support the workforce and seek professional advice. These guidelines are based on the best available evidence and are collated by researchers, experts in the field and other stakeholders (NICE 2020b). However, improving knowledge does not necessarily improve practice. Jensen et al. (2020) created a practice-based research network programme in Sweden to strengthen the implementation of evidence-based practice (EBP) by occupational health services, employers, workers, unions, and workplaces. The results highlighted that translating EBP from the scientific environment to a practice-based context is a challenging task. Relevant research designs and quick short-term results are needed to maintain stakeholders' interest in EBP

and their commitment to applying it in practice. Jensen et al (2020) also explained that organizations which are involved much earlier in the research process may better support vulnerable employees and establish practice-based research networks. Employers may need to invest in the EBP tools and skills to create a culture of evidence-based supportive practices and create a sustainable working environment for the older employee with CMSDs.

It is also recognised that limited prescriptive information is provided to guide employers' to use published recommendations (Robertson 2017; Flynn 2014; DWP and DHSC 2020). The Department for Work and Pensions (2020) conducted qualitative research on behalf of the Work and Health Unit (which is a cross-government unit, jointly sponsored by the Department for Work and Pensions and the Department of Health and Social Care) to explore employers' practices and motivations for using occupational health services. The authors interviewed thirty-five employers from a variety of both small and medium-size enterprises and large organisations. Employers appeared to have a basic understanding of OH services and the benefits of employing this service. The results indicated that employers who facilitated employees' access to OH were primarily motivated by the need to meet legal requirements, reduce costs and/or support and improve employee health and wellbeing. As a participant in their study explained:

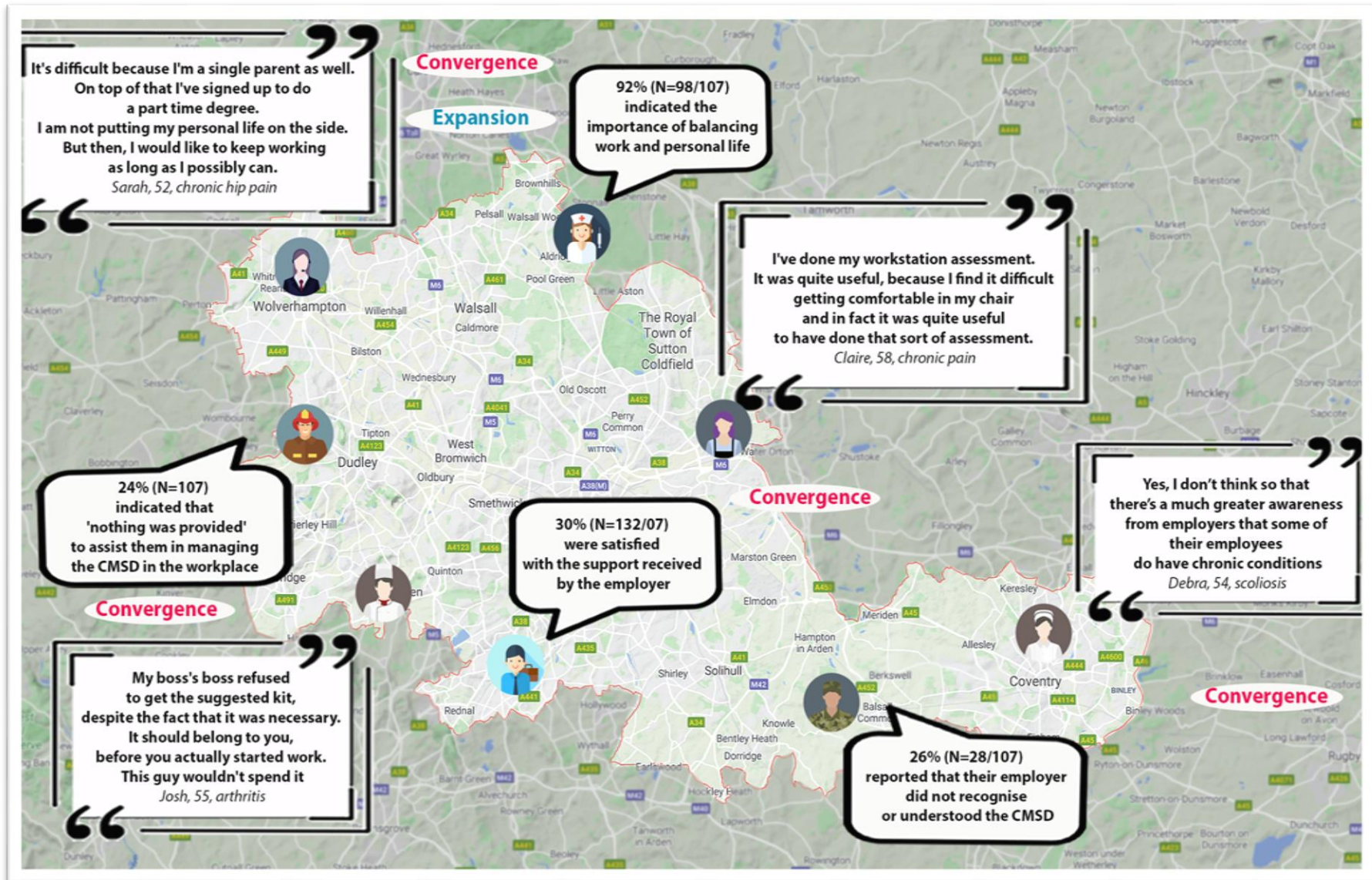
We have to get a medical assessment by an OH provider when we win certain contracts, but we don't single it out as OH use. We do not use it ourselves, only when we are told to. I suppose we do use OH, technically, but we see it as being under a different heading – we're using it for our health and safety arrangements.

The findings in this section can be discussed in relation to both the Work Ability House Model (Ilmarinen and Ilmarinen 2015) and the Arena in Work

Disability model (Loisel 2005; Loisel et al. 2001). The two models illustrate the association between the external environment (e.g. society, policies and legislation) and the workplace environment that aims to encourage fuller working lives. Work, health, and retirement policies can support work ability and enable those who want to work longer, but on the other hand, they create challenges for older employees with CMSDs. The feasibility of extending working lives lies in the employer's approach to implementing governmental policies and providing individualised support to the older employee. However, some employers may be hesitant to invest in resources due to the perceived expenses (DWP and DHSC 2020; Pescud et al. 2015).

Others have been unable to implement EBP strategies within their organisations due to the different perspectives of stakeholders, policymakers and researchers (Kitson et al. 2008; Jensen et al. 2020). Similarly, the Arena in Work Disability Model (Loisel 2005; Loisel et al. 2001) shows that it is important that both the older employee and the employer share the responsibility of managing CMSDs, however, the employer has the ability to e.g. offer supportive strategies, re-arrange work tasks, create a proactive and supportive environment and implement government's guidance and recommendations. The actions and attitudes of the employers are important for both the successful implementation of the government's plans to extend working lives and the management of CMSDs.

Figure 9.8: A visual joint display of the integrated findings on the 'roles and responsibilities of employers in supporting the management of CMSDs'



9.12 The role of the manager in supporting the older employees with CMSDs

The integrated findings illustrated the importance of a supportive manager as someone who could facilitate a flexible work environment and actively listen to employees' specific needs (Figure 9.8). Organisations are obliged to make 'reasonable' adjustments for disabled employees (Equality Act 2010). Making even small adjustments to a work role or setting can be beneficial to employees with chronic conditions (Steadman, Wood, and Silvester 2014; van Eerd et al. 2015; Hoosain, de Klerk, and Burger 2019; Oakman et al. 2015; Bartys, Edmondson, and Burton 2019). The qualitative findings helped us to understand that how effectively employees' managed CMSDs in the workplace was related to open discussions about health matters, the impact of CMSDs on their work, workplace adjustments, and the design of realistic strategies that could reinforce employees' own efforts to manage their condition at work. The importance of the manager's role in promoting and maintaining the workforce's health and wellbeing has already been highlighted in government documents and other initiatives (NICE 2015, NICE 2019, Department for Work and Pensions 2017b). For example, the Department for Work and Pensions (2020b:11) stated that:

The line manager will typically be the first point of contact if someone needs to discuss their health concerns or needs an adjustment to their work or working hours, to enable them to perform to their full potential.

However, the integrated findings highlighted that the employees in this study felt that managers were 'at odds' with the government's recommendations mainly due to a lack of knowledge concerning laws and regulations. An underlying

cause for this conflict may be due to the complexity and the ambiguity of the published guidelines combined with the manager's limited experience in dealing with the current changes in employment laws and policies (DWP and DHSC 2020; Bosma et al. 2021). As organisations are currently adapting to the ageing workforce it will be imperative for managers to re-imagine the profile of 'typical' employees and provide a range of alternative working arrangements as necessary. Research has also highlighted the importance for managers to discuss health issues with the workforce and ensure that 2-way communication is maintained between employees and the organisation (NICE 2015; NICE 2019, Department for Work and Pensions 2017b). As collaboration is a key factor in the workplace when making reasonable adjustments, it is essential for managers to complement these efforts with relevant and timely communications to support older employees with CMSDs. Thus, to build a truly inclusive work culture the manager's role needs to be supported by the organisation and their responsibilities need to be re-framed and reinforced in order that they can support employees' health.

The integrated findings suggested that managers do not, in general, understand the impact that CMSDs have on employees' working lives. The qualitative findings indicated that any strategies offered to facilitate flexibility usually entailed new work trends (e.g. agile working or hot-desking in open-plan offices) which were perceived negatively by some employees with a CMSD. As the participants explained, having no personal workstation at work meant that no specific adjustments could be made for individuals, e.g. desks and chairs could not be adjusted appropriately for each employee using them. These concerns are discussed by Otterbring et al. (2018) who conducted a survey to

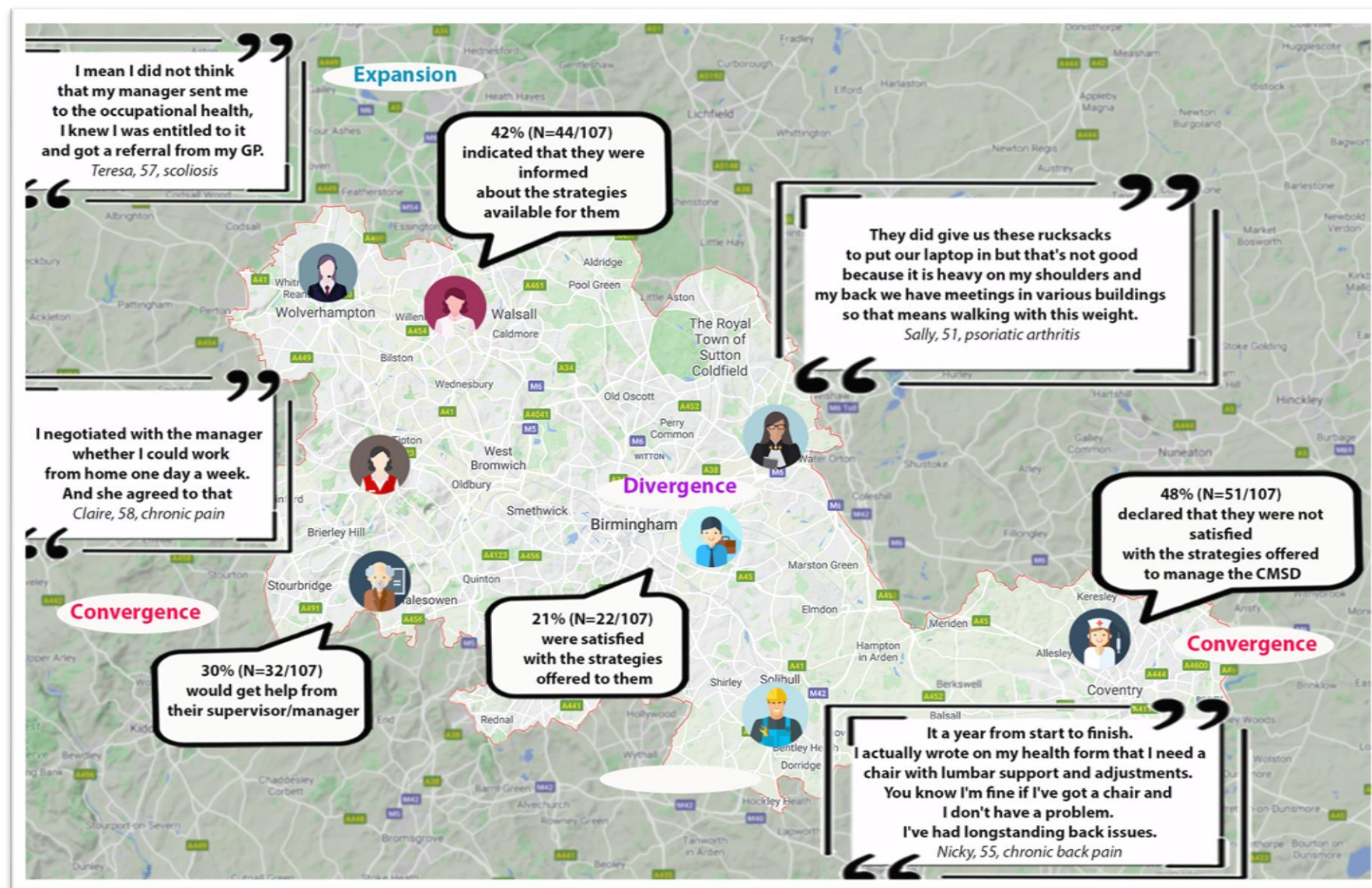
investigate the associations between office organisation trends and employees' interaction with colleagues, perceived health and wellbeing, and job satisfaction. Their findings revealed that, although open-plan offices offer short-term financial benefits for the employer, they are associated with significantly reduced wellbeing, reduced job satisfaction and decreased interaction at work (Otterbring et al. 2018). Since office space utilisation trends reduced the wellbeing of healthy employees, these would likely have an even greater impact on employees' wellbeing with CMSDs. However, currently, no research has been reported that evaluates the impact of these new working trends on the ageing workforce or employees with CMSDs.

An important overall finding in our study was that the manager was not always aware of the relevant policies, resources, or useful strategies available to support employees with CMSDs that could be applied in the workplace. Without the OHS or healthcare professional (HCP) support, the responsibility for managing employees with a CMSD rests predominantly with managers (NICE 2015; DWP 2020b; Business in the Community and Public Health England 2019). The manager's role is essential as they often are the 'face of the employer or organisation' and they can act as a gatekeeper in directing employees to appropriate and available services. The qualitative findings suggested that employees were not well informed by their organisations about what was available to assist them and they frequently had to search for resources themselves. Miscommunication issues and a lack of understanding were linked with employees' being unwilling to disclose or discuss their health issues with the management team.

The Work Ability House Model (Ilmarinen and Ilmarinen 2015) reinforces the crucial role of the line manager. In the work ability house the employees' floor is directly influenced from the 4th floor. Managers and supervisors are responsible for work health matters and their input in offering relevant strategies is necessary as older employees can rarely arrange and access these resources themselves. Recent research reinforces the managers' involvement in the sustainable RTW process after an MSD (Coole et al. 2014; Etuknwa, Daniels, and Eib 2019; Rydström et al. 2017), however, there is limited research investigating the managers' role in the sustainable management of CMSDs.

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Figure 9.9: A visual joint display of the integrated findings on the 'manager's role in supporting older employees with CMSDs'



9.13 The role of self-management and professional health services in supporting older employees with CMSDs

Employees, who participated in this study, identified a variety of services that employers offered to them and which they considered to be appropriate and useful in supporting their own efforts to self-manage their condition in the workplace (Figure 9.9). However, it was clear that not all employees felt supported in developing a plan to manage their condition. Initially I assumed that SMEs would have fewer resources to put formal structures and procedures in place for managing health conditions (Holt and Powell 2015; Black 2008) but the integrated findings suggested that employees of large companies also offered limited support. According to the study participants, some organisations offered a face-to-face OHS whereas others most commonly offered an online occupational health assessment programme. However, employees that used the online software explained that they often found this to be an unhelpful and time – consuming process that did not appropriately capture their needs. Based on the findings of this study and the limited evidence, more research is needed to assess the efficiency and effectiveness of online OH assessment and explore its role in the management of CMSDs.

Figure 9.10: A summary of the services offered by employers to assist employees to manage CMSDs



Furthermore, the integrated findings revealed that employees who did not have access to an OH team frequently consulted an HCP privately to provide advice on managing the CMSDs. This group of older employees, who access professional services, require interventions that are individualised and focused on the different environmental contexts of the clients and their specific needs (Shaw et al. 2014; Blyth and Noguchi 2017; Edge, Cooper, and Coffey 2017; Trappenburg et al. 2013). For example, both the qualitative and quantitative findings indicated that the employees primarily accessed physiotherapy services which offered an individualised approach and that this was perceived as an effective strategy. Previous research supports our finding that interventions offered by healthcare professionals who are trained to provide vocational support, like physiotherapists and occupational therapists, can improve work participation and facilitate the management of CMSDs (Wilkie et al. 2020; Wynne-Jones et al. 2018a; Hutting et al. 2017; Johnston and Shaw 2013).

Interestingly, our findings also highlighted that poor communication and misleading information was often shared between the employee, the employer and the healthcare service providers (HCSPs) who were accessed. Employees experienced a lack of dialogue between their manager and the HCSP and they felt that this left them responsible for interpreting and transferring information between the two sectors. Sennehed et al. (2018) demonstrated that effective communication is vital for managing acute and sub-acute low back and neck pain in the workplace. This RCT investigated the use of the convergence dialogue method (CDM) on work ability. Employees in the study received structured physiotherapy and CDM delivered by a physiotherapist. In the CDM,

the physiotherapist first arranged an interview with the employee and then with the employer. These interviews are followed by a meeting between the employee, employer, and the physiotherapist to discuss how they can best support the employee in managing the condition at work. Sennehed et al. (2018) found that this type of early workplace dialogue approach was cost-effective and that work ability was significantly improved. Collaboration between professionals, who contribute to occupational health in organisational settings, may be the missing link in achieving effective health conversations between the employer and the employee. This missing link needs to be addressed if management of CMSDs in the workplace is to be effectively facilitated.

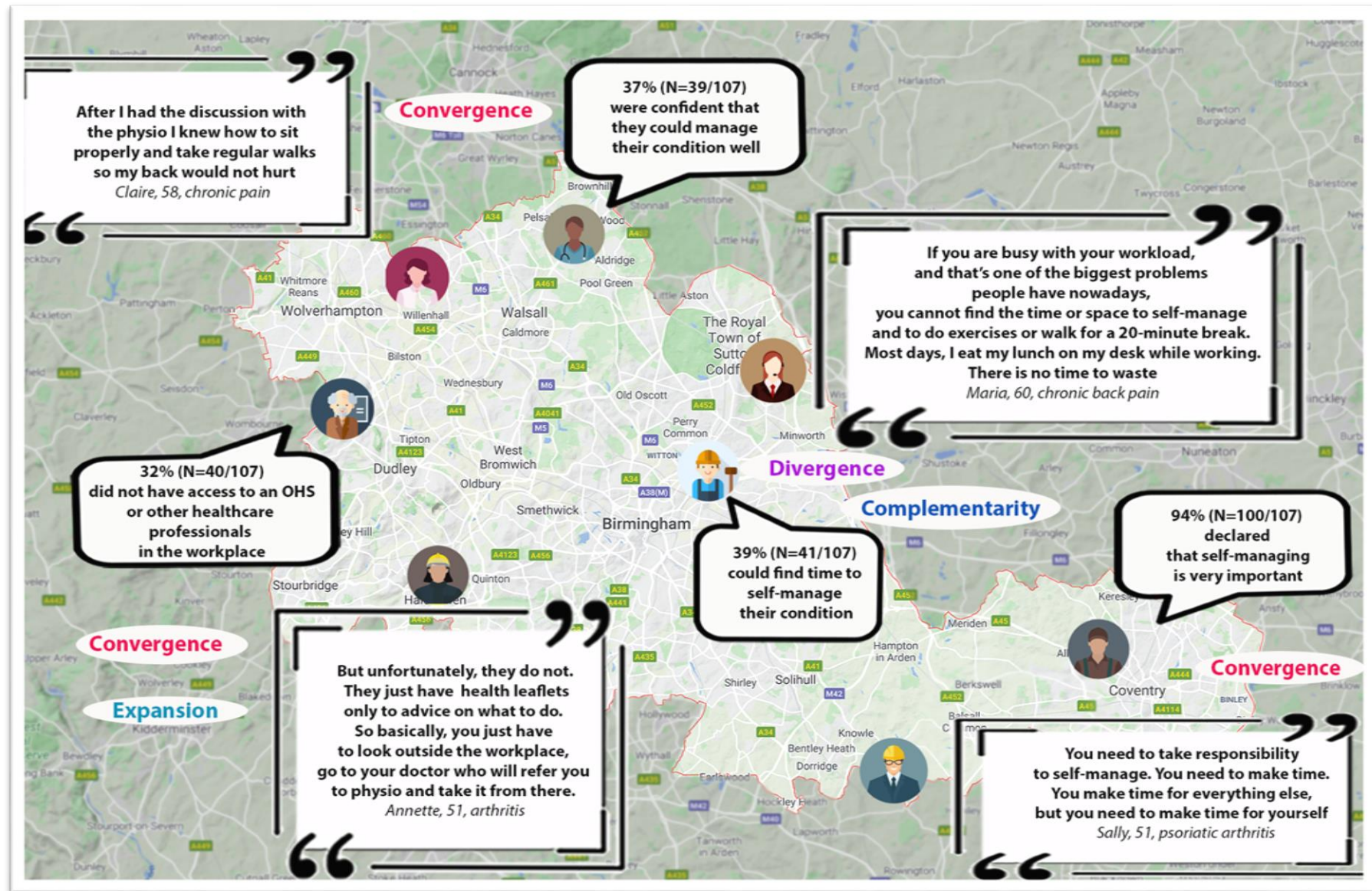
The integrated findings highlighted that older employees in this study were motivated to self-manage the condition and most of them clearly understood the necessity of taking their health into their own hands (Figure 9.10). Employees were aware, in a general sense, of the elements of a healthy lifestyle approach, but they did not appear to have the confidence or motivation to integrate them in a practical sense, even though they realised that this would benefit them. The findings showed that employees found it difficult to juggle multiple responsibilities and self-management. However, they all thought it was very important to keep working as long as they could in order to fulfil their work responsibilities and to achieve their personal goals.

Finally, the integrated findings revealed that older employees, who sought support from HCSPs, used primarily passive strategies, such as medication or massage, to manage their condition. One explanation for these choices could be that people usually expect (or hope) that passive interventions will provide a 'cure' or a 'quick fix' with minimal self-contribution (Hutting et al.

2019; Lewis and O'Sullivan 2018; Summers, Bajorek, and Bevan 2014).

Although these strategies may be helpful in treating acute conditions, they may become an obstacle to promoting sustainable management of CMSDs as they only provide short-term relief (Summers, Bajorek, and Bevan 2014; Carlson and Carlson 2011; Babatunde et al. 2017). Researchers have highlighted the role of self-management programmes (Gay et al. 2016; Du et al. 2011) and the importance of prescribed exercises for those with a CMSD (Skamagki et al. 2018; Sundstrup et al. 2020). There is also evidence that occupational health advice is an essential element in designing an effective self-management programme (Johnston and Shaw 2013; Crawford et al. 2020; Hutting et al. 2019). Researchers are generally agreed that employees with a CMSD need to be encouraged to take an active approach if long-term self-management is to be achieved and work-related health maintained (Johnston et al. 2013; Summers, Bajorek, and Bevan 2014; Crawford et al. 2020; Foster et al. 2018; Hutting et al. 2019).

Figure 9.11: A summary of the strategies used by employees in self-managing the CMSD



Chapter 10: Conclusions

10.1 Introduction

The current changes in demographics, the need for economic restructuring and the necessity for longer working lives have challenged the ageing workforce, the employers, and the welfare state (Government Office for Science 2019; Foster 2018; Briggs et al. 2020). Chronic musculoskeletal disorders are a major cause of work disability with severe consequences for the working ability and prolonged employability of older employees (Palazzo et al. 2014; Duffield et al. 2017; Leclerc et al. 2014; Burdorf 2012). The need for action is recognised in principle by the UK government and independent organisations but in practice, there are deficits in implementing national problem-solving options like a national OHS (DWP 2019a; DWP and DHSC 2020; DWP 2015; DWP 2017b; DWP 2017a).

Over the course of nine chapters, this thesis has documented a study which was conducted, to explore the management of CMSDs in the workplace focusing on the ageing workforce. The relevant literature has been identified and reviewed enabling this research to be situated within the current socio-political landscape. An exploratory MMR approach was selected and executed and the subsequent data analysed. The integrated findings have been discussed and positioned within the current research literature. In this final chapter, implications for practice will be discussed and, further to this, recommendations will be made for (a) employers and managers to support better the ageing workforce with CMSDs, (b) employees to provide them with workplace strategies and enhance their confidence and (c) to highlight the need for further research that can support the occupational health agenda by focusing on the ageing workforce.

10.2 Review of research aim and objectives

Ten objectives were identified as required to achieve the overarching research aim of this study. The aim was to explore employees' experiences of CMSDs in relation to their employment, their perspectives on managing these conditions in the workplace, the strategies used to facilitate and maintain their roles and responsibilities and to identify what services are offered to them. These objectives were achieved and are reviewed here:

1. Discuss the diversity of older employees' experiences of managing the CMSD in the workplace;
2. Describe employees' perceptions of the support, in relation to the CMSD, that they receive from employers, management and colleagues in the workplace;
3. Describe the strategies that older employees use to manage the CMSD and maintain their work roles and responsibilities and rate the degree of perceived importance and effectiveness of the strategies identified;
4. Describe the services /strategies offered at work as they were perceived by older employees and analyse the relative importance and effectiveness of these strategies as identified by the employees;
5. Identify the underlying factors that influence older employees' decisions to work or not work as a response to the adverse effects of the CMSD on their performance and discuss the rationale for these decisions;
6. Explore older employees' knowledge of, and emotive responses to, the changes in pension and retirement age in relation to the CMSD and their employment plans;

7. Identify the areas of future research needed to develop relevant and feasible strategies that employers and management could effectively utilise to support older employees with CMSDs in the workplace;
8. To enhance an understanding of the issues experienced by older employees with CMSDs and to recommend strategies by which these issues can be optimally managed in the workplace;
9. To enhance an understanding of the issues experienced by older employees with CMSDs and to recommend strategies by which these issues can be optimally managed in the workplace;
10. To develop two publications: (1) an employee leaflet and (2) an employer and managers leaflet that recommend how these issues can be addressed in the workplace and to outline a plan by which these publications can be disseminated.

10.3 Original contributions of this research

This study generated new knowledge in several ways. Chapter 2 provided a comprehensive systematic review of the relevant and current quantitative research that investigated approaches to management of CMSDs and their impact in the workplace. The findings highlighted that high intensity strength exercises and/or integrated health care at the workplace can decrease pain and symptoms for employees who experience CMSDs. An earlier version of this chapter was published in a peer-reviewed journal (Skamagki et al. 2018) and has been disseminated widely through social media.

Chapter 3 also contributed new knowledge by synthesising the current qualitative research that has explored the positive and negative experiences of

employees who manage CMSDs in the workplace. This narrative review illustrated the importance of the work environment and culture, the social components of work, and the employee-manager relationship supporting employees with CMSDs. The findings revealed that these environments are highly influenced by the employer, the manager and co-workers. This narrative review has been submitted for publication in a peer-reviewed journal (in progress).

Moreover, this is the only study, that I am aware of, that has been conducted in the West Midlands, England and that brings together primary evidence concerning the management of CMSDs in the workplace and focuses on the ageing workforce. The study findings identified opportunities for improvement and areas of good practice that can inform future strategies to support the management of CMSDs in the workplace and highlighted specific, previously under-recognised, subgroups which needed additional support. These subgroups, within the ageing workforce, are women, those with a 'non-visible' CMSD and those with chronic inflammatory disorders. The study suggests clear and focused recommendations for employers, managers and employees and outlines the creation of leaflet and booklets for its distribution (Table 10.1, Appendix 10.1 and 10.2). Lastly, this is the first study that links the phenomenon of leaveism with the management of CMSDs at work.

10.4 Implications for practice and research

The study findings revealed discrepancies between how employers, managers, and supervisors interpret existing employment policies and how these interpretations create barriers to identifying and implementing appropriate strategies to support older employees in managing CMSDs at work. The barriers identified mainly relate to factors associated with managers, colleagues and

employers, such as their lack of communication, empathy, training activities, resources, health conversations and knowledge of the nature of CMSDs.

Managers, as reported by study participants, displayed uncertainty about their role in supporting employees' health at work which resulted in consequences for the ageing workforce.

The findings also highlight the importance of social support in the workplace and particular the positive contribution of colleagues in terms of behaviour, attitude, and expectation of those with CMSDs in the workplace. However, limited research has been conducted that addresses the role of colleagues in supporting those with employees. It is also important to consider that supportive colleagues may not be able or willing to accommodate day-to-day activities over a long period of time in the absence of a sustainable plan for the management of CMSDs at work.

Older employees, who participated in this study, consistently expressed uncertainty and concern about the progression of their condition, their future health, their current and future employment status, the support available at work and the self-management strategies they could use to manage their CMSD. The study findings support the government's agenda to sustain older employees at work (DHSC and DWP 2017) and highlight the importance of individualised strategies that promote and manage the health and wellbeing of the older workforce. The involvement of OHS or other HCPs was also found to be important in supporting adjustment latitude, translating best evidence into practice, and assisting managers and employers to build an inclusive work environment for employees with CMSDs.

Based on the study findings reported in this thesis, the Work Ability House Model (Ilmarinen and Ilmarinen 2015) and the Arena of Work Disability Model

(Loisel 2005; Loisel et al. 2001), provided a solid theoretical foundation that guided the data collection and analysis phases of this study and the integration of the findings. These models contributed to a more comprehensive understanding of the management of CMSDs at work, provided a structured outline of the different influencing systems (e.g. socio-political) and acknowledged the key stakeholders¹¹ involved in the management of CMSDs for the ageing workforce. However, according to the participants in this study neither they nor the employers (or managers) had a clear understanding of the relevant local or national government policies and how they might be implemented in the workplace. It also seemed to them that these policies were neither useful in providing specific guidance nor easily applied in individual cases. A critique of relevant policies and recommendations for policy at a local and national levels are beyond the scope of this study.

Furthermore, research related to OH services provision needs to evolve in order to encompass the impact of musculoskeletal health and the co-existence of other chronic conditions on work especially for the ageing workforce and its subgroups, e.g. women. The systematic review (Chapter 2) and other reviews (Sundstrup et al. 2020; Palmer et al. 2012) revealed research on CMSDs has been primarily experimental or quasi-experimental (i.e. survey research) with mainly inconclusive results or results reflecting a single point in time and not a trajectory over time. One recent literature review of longitudinal studies (Cabral et al. 2019) investigated the impact of multimorbidity on work and highlighted the need for more longitudinal investigations of the extent and impact of chronic conditions in the workplace. This recommendation is congruent with a recent

¹¹ By stakeholders I include managers, employers, co-workers, OH providers and HCPs working on OH such as nurses, physicians, occupational therapists and physiotherapists

editorial in The Lancet (2018) which emphasised multimorbidity as a major health priority. This study also highlights the need to focus research on the impact of multimorbidity on the issues experienced by an ageing workforce who are required to work longer. While there is a strong case supporting the societal and public value of OH research, there is a lack of high-quality intervention studies on multimorbidity and maintaining function in an ageing population (Lalloo et al. 2019).

In addition, a wide range of outcome measures are currently used to assess the clinical effectiveness of the management of specific MSDs (including CMSDs). However, these outcome measures have limited utility in OH and MSK practice and authors (Devlin and Appleby 2010; Kyte et al. 2015) agree that a more sensitive outcome measure is required to measure the effectiveness of strategies and employee outcomes at work across the full range of CMSDs. Recently a patient reported outcome measure has been used to evaluate physiotherapy treatment of MSK conditions (Bryant et al. 2018). However, there is still a need for a specific stand-alone outcome measure that enables assessment of the effectiveness of strategies /interventions implemented to sustain employees who have a CMSD at work.

10.5 Recommendations for practice, policy and research

Based on the current research and the study findings, the following recommendations have been developed to assist employees with CSMDs to implement effective strategies that can enable them to manage their condition in the workplace, and to provide guidance for employers or managers in developing effective individualised plans to support employees with CSMDs in the workplace.

10.6 Recommendations for managers and employers

It is recommended that the role of colleagues in providing effective support to co-workers be acknowledged and addressed. For example, organisations can involve colleagues in a 'buddy system'. Such a system would provide peer support for older employees with CMSDs. It would encourage colleagues to adopt the role of a 'buddy' and provide general assistance to them, when needed, for example, in duties including difficult physical work tasks e.g. lifting, or in supporting the manager making alternative working arrangements with the employee, such as, working from home. For example, peer support groups could be created to provide social, emotional and / or practical support to one another. It may be useful for co-workers or colleagues to be provided with some specific guidance in adopting this role, e.g. how to support older employees with a 'non-visible' condition or online training with a focus on empathy and understanding of the nature of CSMDs and establishing the boundaries of the 'buddy' role. Guidance could also explain the personal attributes of a good buddy and their roles and responsibilities.

It is recommended that employers and managers actively facilitate a supportive community in the workplace for all employees but particularly those managing a CMSD. Organisations can support regular health meetings, workplace health events or wellbeing days where they can invite relevant health and lifestyle speakers from registered health associations (e.g. Chartered Society of Physiotherapy) or other health charities. In that way, older employees could participate in such events and ask questions about their health, explore other self-management strategies and network with others in the organisation that have

CMSDs. Employers could also encourage older employees to participate in work exercise programmes such as outdoor activities, staff team sports or other health promotion initiatives. The extent of the support will, however, in reality depend on organisation's finances and resources and the management support made available.

It is recommended that organisations invest in educational initiatives that could facilitate the creation of stronger relationships between the manager and the older workforce with CMSDs. Employers need to consider providing training and developmental opportunities to enhance the manager role in creating a healthy work culture. Training could be in the form of online or synchronous seminars to, for example, promote empathy, understanding of CMSDs and enhance knowledge of organisational policies and relevant governmental schemes. Such seminars could be part of the organisation's 'essential training' for new managers and frequent updates could be provided. Frequent training initiatives could also debunk common myths about e.g. CMSDs and its effect on work performance, decrease the tendency to stereotype and judge behaviours without understanding the cause, and build the necessary skills to have productive conversations about musculoskeletal and mental health at work. The manager plays an important role in distributing and adjusting work tasks, which have been shown to facilitate the management of CMSDs, and this aspect of the manager's role needs to be acknowledged and supported by the organisation.

It is recommended that communication and open discussion between older employees with CMSDs and managers within the organisation be promoted. If managers are supported by employers they will be able, for example, to use performance reviews as opportunities for feedback and learning instead of

evaluation against strict targets. Frequent health conversations, which are supported by organisational policies (e.g. in performance appraisals), could promote disclosure and change the organisational culture. It is also important to recognise older employees' role in helping others in the organisation to understand the experience of ageing and managing CMSDs in the workplace. Hearing the personal stories and experiences of others can be useful in promoting learning. In addition, discussing effective strategies and hearing about success stories can boost employees' confidence and provide managers with new ideas. Therefore, the involvement of employees with CMSDs in training or educational opportunities could promote understanding and exploration of practical approaches to resolving issues related to the management of CMSDs in the workplace.

It is recommended that employers acknowledge and understand the need for individualised support for older employees with CMSDs. Managers and employers need to develop straight forward processes by which older employees with CMSDs can efficiently access support at work. The implementation of an individualised programme in an organisation is an ongoing, long-term, multi-level and flexible strategy, that requires the co-creation of goals, allows time for reflection, encourages staff participation and communication, and encourages early contact. It is not uncommon for older employees with CMSDs to find that work tasks negatively affect their musculoskeletal health or their work ability status negatively influences their work performance. Therefore, it is important to explore the possibility of flexible working arrangements with the manager when, for example, employees have a flare up or are not feeling well.

It is recommended that employers regularly review and amend, as necessary, organisational leave policies¹² in order to address the issues of leaveism and presenteeism. Specifically, sick leave policies and attendance management policies need to be flexible and meet the needs of subgroups, such as, women over the age of 50, older employees with more than one CMSD and those with CIDs. What is most important for an employer to consider is establishing separate policies that cover absence associated with chronic conditions or disability and absence resulting from ill-health or sickness. Such policies could help achieve the right balance between managing absence efficiently and providing support and help to employees with CMSDs.

It is recommended that employers or organizational representatives collaborate with their local communities and shape new public conversations about health at work. For example, joined-up campaigns focused on the relationship between CMSDs and the aging workforce and the widening of health inequalities in the UK could influence national policy in prioritising health and support discussions with the wider public health community. Working closely with charity organisations may enhance an organisation's profile and impact within their local community.

It is recommended that organisations endorse the role of OHS and promote employee's utilisation of these services. These services have the potential to support managers in having early health conversations and bridge the gap between the management team and the older workforce. Companies that have access to OH services need to consistently engage with them or, as an alternative, employ individual healthcare services, such as occupational therapy

¹² Including a range of policies such as sick leave, annual leave, sabbatical leave, unpaid leave etc.

or physiotherapy as appropriate. If financial resources for such services are not available employers may create internal organisational support roles, such as, 'wellbeing champions'. However, since these roles are undertaken by volunteer staff members, it would be important that the organisation provide training initiatives to develop and support the role with a particular focus on the ageing workforce and those with CMSDs.

It is recommended that employers offer the opportunity to employees with CMSDs to learn about self-management strategies that they can use at work. Employers might consider offering education opportunities for the ageing workforce that include strategies, such as, taking active breaks, regular changes of posture and stretching exercises, and that provide healthy lifestyle recommendations and information about resources that support them in working longer or promote discussion with their manager. These opportunities could be delivered in collaboration with appropriate HCPs using the best available evidence. For example, the systematic review findings (Chapter 2) indicated that the use of physical activity and/or integrated health care at the workplace can decrease pain and symptoms for employees with CMSDs. It would be useful if managers and employees are aware of this type of research evidence and are able to apply or implement it at work.

10.7 Recommendations for employees

It is recommended that older employees be encouraged by organizational representatives to engage in open discussions with their manager about their health. It is important that they feel able to fully disclose information about their CMSD in order that the individual (manager or employer), who is responsible for

health and safety and employee welfare at work, can plan and respond appropriately.

It is recommended that older employees take the responsibility, as much as possible, of becoming familiar with relevant workplace and leave policies, governmental work initiatives and schemes. A collegial relationship with their manager, as recommended above, will enable employees to find this sort of information, as will contact with their union representative or the human resources service (if available).

It is recommended that older employees be encouraged to discuss, in a constructive way, their issues related to musculoskeletal health with their colleagues or co-workers. Older employees should not feel that they need to remain at work when they are unwell. Frank discussions with the manager could result in more flexible absence policies and access to work adjustments. It is common for others in the workplace not to understand the nature of CMSDs and explanations about, for example, symptoms, or flare-ups and their impact of work ability may enhance empathy and social support. Older employees, particularly those with CMSDs, need to feel supported at work and the development of a support network within the workplace is an important goal for both the organisation and employees.

It is recommended that older employees develop strategies by which they can self-manage their condition at work as these have been shown to improve current work ability and participation.

Research has highlighted that exercises and access to healthcare services are effective in helping individuals to create a self – management plan. Scheduling time, which is preferably endorsed by the organisation, with occupational health

services at work or a healthcare professional, such as a physiotherapist, is a way of obtaining the support and information needed to implement individualized self-management strategies at work.

Table 10.1: Summary of the suggested recommendations for employers, managers and employees

Recommendations for employers, managers	Recommendations for employees
Acknowledge the role of colleagues in providing effective support to older employees with CMSDs	Engage in open discussions with managers about health issues that affect work ability and ask for individualised support
Foster an empathetic and supportive work culture that encourages the management of CMSDs	Become familiar with relevant workplace and leave policies, governmental work initiatives and other schemes
Encourage older employees to participate in work exercise programmes or other health promotion initiatives.	Discuss the musculoskeletal health issues with co-workers and create a peer support group
Invest in educational initiatives that could facilitate the creation of stronger relationships between the manager and the older workforce with CMSDs.	Avoid staying at work when feeling unwell or having a flare-up; discuss flexible work and access-to-work adjustments
Promote communication and open discussion between older employees with CMSDs and the management team	Create a supportive network that provides social, emotional and / or practical support at work
Provide individualised supportive strategies for employees with CMSDs and develop straightforward processes of support	Engage with active self-management strategies that will improve work ability and participation
Regularly review and amend organisational leave policies to address the issues of leaveism and presenteeism	Participate in work exercise programmes as they have been proved to be effective in managing CMSDs at work
Endorse the role of OHS and bridge the gap between the management team and the older workforce	Ask your manager about available healthcare services which support the design and implementation of individualised strategies at work.
Offer education opportunities to employees with CMSDs to learn about self-management strategies that they can use at work.	

10.8 Recommendations for policy

It is recommended that government consider the establishment of a national occupational health service. Governmental policies have embedded work as a health outcome; however, the absence of work-focused health care (the NHS does not currently provide free OH services), demonstrates an obstacle to work participation. Although it was not an aim of this study to make specific policy recommendations, the findings of this, and other studies reviewed, would suggest that provision of a national occupational health service would enable OH providers and HCPs to support the prevention, management and RTW process for all employees (including the ageing workforce with CMSDs) and improve work ability and participation.

10.9 Recommendations for further research

It is recommended that rigorous research, utilising appropriate methodologies and methods, be developed to address the following areas:

Exploration of employers' and managers' experiences and perspectives on the management of CMSDs at work. Such research would enable the obstacles and facilitators of specific management strategies to be identified.

Investigation of the effectiveness of online occupational health assessments in supporting the management of CMSDs in the workplace and exploration of the barriers and facilitators associated with the provision of online OH services.

Development of a specific standardised outcome measure with the sensitivity to measure the effectiveness of OH services delivered in the workplace. Outcome measures are limited in their scope and quality and there is a need for specifically work-related OMs to be developed.

Investigation of the effectiveness of OH services at work using established outcome measures.

Exploration of the impact of current leave policies on the health of older employees with CMSDs with a specific focus on women and those with a CID.

Exploration of the effects of the phenomenon of leaveism on productivity and the physical and mental health of older employees with CMSDs and more rigorous research is warranted.

Further research is required that focuses attention on women with CMSDs, specifically on how women's multiple roles affect their management of CMSDs in the workplace, and their physical health and mental wellbeing in the context of increasing retirement age.

Development of an updated OH research agenda with a clear plan for implementation of EBP. It is important for OH researchers and other stakeholders to collaborate in the process of translating research into practice, in order that employers and employees can access and interpret relevant research evidence and use it effectively in planning and making choices about effective strategies to support their work ability.

New office space utilisation and organisation strategies, such as open plan offices are being widely implemented without the benefit of research evidence related to

the effects of these changes on the health of older and younger employees with CMSDs. Further research is needed.

Although specific recommendations for the management of CMSDs after COVID-19 are beyond the scope of on study, it is important to recognise that COVID-19 has created different trends, e.g. remote working, that might reshape work environments after the pandemic recedes. Exploration of how the new working policies after COVID-19 may positively or negatively affect older employees with CMSDs.

10.10 Development of information leaflets and future plans for dissemination

Dissemination of the integrated findings and the suggested recommendations will include publications in peer-reviewed journals, conference(s) presentations, workshops with employers and managers on wellbeing days and advertisement through social media and magazines. While publication of the study findings in scientific journals may increase the awareness of the study recommendations within the academic community, it will be important to ensure that they are disseminated to the audiences that could directly benefit from them and maximise their impact in the workplace. Two leaflets (a) for employers and managers and (b) for employees have been developed in draft form (Appendix 10.1 and 10.2) that outline a number of recommendations for 'strategies to manage CMSDs in the workplace'. As Professor Chris Whitty¹³ stated in a the National Institute for Health Research conference on

¹³Professor Chris Whitty is Chief Medical Officer for England, the UK government's Chief Medical Adviser and head of the public health profession. He represents the UK on the Executive Board of the World Health Organization.

dissemination: *“Research is of no use unless it gets to the people who need to use it”* (2016 in National Institute for Health Research 2019). Thus, a sound dissemination plan is needed to ensure that the research findings are effectively communicated to the relevant stakeholders and that they potentially effect positive change in practice in the workplace.

Wilson et al. (2010) defined dissemination as a *“planned process that involves consideration of target audiences and the settings in which research findings are to be received and, where appropriate, communicating and interacting with wider policy and health service audiences in ways that will facilitate research uptake in decision-making processes and practice”*.

Dissemination, in relation to this plan, refers to the communication of the research recommendations to employers, managers, and employees, in order that these stakeholders can make more informed decisions and choices in managing CMSDs in the workplace. Schipper et al. (2016) conducted a systematic review of the most efficient strategies for disseminating research recommendations to patients. The authors concluded that the dissemination of research evidence and recommendations can empower patients to make more informed decisions about their health.

In this study it was clear that employees had limited access at work to information about available services and strategies that would effectively assist them to manage a CMSD in the workplace. In addition, employees perceived that their managers also had limited access to information about available relevant government programmes and services and limited understanding of the impact of CMSDs at work. Therefore, the publication and dissemination of accessible

information was considered not only an important output for this study but my responsibility as researcher.

The dissemination plan includes several stages: Firstly I needed to produce draft leaflets. At this stage, I had to consider the two different audiences and use appropriate language to highlight the key messages and the relevant recommendations in a simple and clear manner. The content for both leaflets has been worded in simple language and real-world examples have been included to facilitate stakeholders'¹⁴ understanding and appropriate interpretation of the recommendations. As the management of CMSDs require an individualised approach there may be other strategies beyond the recommendations and the options outlined in the leaflets. The strategies provided derive only from the study findings and this is clearly stated in the leaflets.

The next step in the development of the leaflets, which will take place after completion of the PhD programme, is to engage relevant stakeholders in a review process. Representatives from the local workforce and the companies – employees and employers - who participated in this research will be invited to review the leaflets and provide feedback online. A webpage or a social media page will be created, where the scope of the review process will be clearly explained. The two leaflets will be uploaded and a form will be available by which structured feedback can be provided. For example, open and closed questions will be asked about the following: any content that might be considered controversial, clarity of the language used, the recommendations and utility of the example strategies provided, the graphic design, colours used and general formatting.

¹⁴ The relevant stakeholders for dissemination are employers, managers, and employees with CMSDs

Older employees will be encouraged to comment on the scope of the leaflet content i.e. whether it takes into account specific issues that are important to them or if the leaflet inadvertently excludes any groups of employees. Employers and managers will be asked to indicate areas of contradiction or conflict and the degree to which the recommendations enhance their roles by providing clear guidance and useful information. The online page will be separated into a section for older employees and a section for managers and employers to help them navigate better and select the appropriate leaflet to review.

In addition, representatives of voluntary organisations and charities with an interest in musculoskeletal health and work e.g. Versus Arthritis and ACPOHE, will be invited to review both leaflets. These reviewers will be well placed to provide general feedback as they will have previous experience in producing and disseminating leaflets for patients and other stakeholders.

After receiving and summarising the feedback from all relevant groups and making appropriate revisions, the second draft leaflets will be uploaded on the website and stakeholders will be invited to review them again with a focus on providing general feedback. In addition, an online link will be posted inviting interested reviewers to a discussion of the leaflets on an online session. Any feedback received will be integrated into the leaflets. At this stage the two leaflets will be ready for production and dissemination in two formats, an online pdf leaflet that can be printed out and a hard copy leaflet.

Dissemination of information leaflets should include a combination of strategies to ensure that stakeholders are made aware of their availability (Schipper et al. 2016). For example, social media releases to the managers,

employers and employees will be used to disseminate the leaflets online. The networks of voluntary organisations and charities e.g. ACPOHE, CSP etc. may also provide a useful avenue for supporting dissemination. These groups could inform their members about the leaflets and signpost them to the appropriate website, host the leaflet on their own websites, advertise them at seminars and conferences and/or promote them with associated organisations or professional networks. In addition, I will identify opportunities to present the leaflets at selected conferences and promote dissemination in my own professional networks.

It is also my intention to meet and provide hard copies of the two leaflets to the organisations and older employees who participated in the study. These individuals would be encouraged to disseminate the leaflets by circulating them in their internal and external networks. Finally, hard copy leaflets will also be sent to other organisations in the West Midlands and public places such as libraries, local gyms, or other community spaces. Therefore, it will be necessary to identify and secure funding from voluntary organisations and charities e.g. ACPOHE and CSP for the leaflet publication and postage costs.

10.11 Strengths and limitations of the study

This section presents the strengths and limitations of the overall MMR project research strengths. To address the lack of a consensus framework in the literature for evaluating primary MMR studies, this section is guided by the work of O’Cathain (2010), Heyvaert et al. (2013) and Halcomb (2019). These authors proposed that individual components of an MMR study, in this study the quantitative (survey research) and qualitative components, be evaluated in isolation. The strategies used to ensure trustworthiness of the qualitative phase in this study are described in detail in Chapter 5. Rigor has been achieved through

multiple strategies, for example, the consistent use of a personal online diary, detailed written descriptions of the qualitative study process, clear justification of the data collection methods and analysis approaches used and ensuring that the qualitative findings that can be trusted to accurately represent participants' experiences. Similarly, the methodological quality of the survey component has been discussed in detail in Chapter 7. The carefully designed questions and the process by which the questionnaire was constructed and administered enhanced its' validity and reliability.

Two reviews (a systematic review and a narrative review) highlighted gaps in the current research literature and contributed to the justification of an overarching research aim. A MMR approach, aligned to pragmatism, was considered to be the best choice to address the complex aim of this research. Specifically, a sequential exploratory design was chosen whereby the qualitative interview data supported the creation of the survey questionnaire. The analysis of the two phases followed systematic procedures and was supported by an experienced team of qualitative and quantitative and MMR researchers. The integration of the quantitative and qualitative findings is another strength of this study as I developed two joint displays to facilitate the analysis and synthesis of the two sets of findings (Chapter 9). In this way, I ensured that the conclusions drawn from this study extend beyond the findings of each component. By integrating the findings, I achieved greater understanding of the topic of interest and was able to identify clear recommendations for employers and employees and implications for practice, policy and research. Finally, this research aimed for a thorough understanding of the phenomenon of interest and transferability but not statistical generalisation.

The limitations of each phase of this study are discussed extensively in the relevant Chapters 5 and 7. Some issues in the survey phase were unavoidable in the implementation of this study given specific design factors, e.g. the diverse administration methods of the questionnaire meant that it was not possible to generate a higher response rate. Another limitation related to the repetition of items within the survey questionnaire. I created the questionnaire items guided by the principles of Johnson and Christensen (2020:210) which suggested repetition of important questions in a different format within a questionnaire to confirm if respondents have given a conscious response. Therefore, a few items were repeated as, for example, statements of agreement at the end of the questionnaire. Although this was not highlighted as unnecessary repetition in the pilot testing, I realised in the questionnaire analysis that these items did not add content. On the contrary, if they had not been included, I would have been able to ask a few different questions that were removed due to the length of the final questionnaire. Nevertheless, questionnaire analysis on those items demonstrated that respondents replied consciously.

Throughout this research, I have reflected on the lessons learned in each phase of the study. I made several assumptions, based on my personal and professional experiences, about the management of CMSDs at work, the strategies offered and used by the ageing workforce in the early planning stages, which I explored further. For example, my understanding of the phenomenon of presenteeism as related to the management of CMSDs was initially limited and I needed to delve into it before and during the qualitative phase. However, I did not become familiar with the phenomenon of leaveism until after the data collection phase. Leaveism was not identified or addressed in the two reviews conducted at the beginning of the study. However, I realised, in hindsight, that the issues

related to leaveism were discussed by the qualitative interview participants. During the interviews, I did not recognise these issues and did not explore the concept by asking probing questions during the interviews or in developing the survey questions. This was a direct result of my lack of previous knowledge about leaveism but also my lack of experience in conducting and analysing qualitative interviews.

Lastly, my personal characteristics, such as my past experiences, gender, ethnicity, and professional position as a physiotherapist, may have influenced the participants' interview responses, the probing questions I asked and my interpretation of the data. However, I used different strategies to overcome these obstacles, for example, by documenting in an online journal my thoughts and feelings that could have influenced the methodological decisions I made in the qualitative phase of this study. A discussion about reflexivity and how it was achieved can be found in Chapter 5.

10.12 Summary of conclusions

This chapter discusses the key issues that arose from the integrated findings of this research, the implications for practice and research are highlighted, and specific recommendations are made. The study objectives were met during the course of the study process, and, in this way, the overarching research aim was achieved. This chapter suggests that older employees with CMSDs require individualised support to remain employable for as long as they need especially those that face increased retirement ages. Current challenges call for employers to focus on identifying effective ways to support the ageing workforce and invest in training opportunities for managers or collaborative

opportunities with HCPs and other stakeholders. This research also suggests that a flexible, empathetic, and resourceful work environment is needed to support sustained employability for an ageing workforce.

Future plans to assist older employees to manage CMSDs should be proactive in order to extend beyond the short-term management of the condition and consider how long-term musculoskeletal health can be optimised. Attention, within the work environment, needs to be paid to social wellbeing of older employees and acknowledge the uncertainty that they experience as they attempt to manage CMSDs at work. In addition, future strategies should be carefully implemented that take into account factors, such as, the complexity of the organisation, the diverse workforce, and the managers' abilities and responsibilities.

This study has identified a number of gaps in the research and recommendations for further research have been discussed in this chapter. The most important recommendations highlight the need to investigate the provision of OH services and explore new work environment trends. Similarly, further research is required that focuses on poorly recognised subgroups of the ageing workforce, e.g. women and those with CIDs who need additional support to manage CMSDs in the workplace. Two leaflets will be produced to provide an insight on the aforementioned issues and outline a plan to be used by employers, managers and older employees.

Finally, it is my hope that the new knowledge generated, as a result of conducting this study, will contribute to an enhanced understanding of the short and long-term management of CMSDs in the workplace and contribute practical

strategies to benefit employees with CSMDs in their efforts to maintain their work ability, to support their engagement at work and their commitment to work.

APPENDICES

This section includes the signposting for further relevant figures, tables or sections as described in the main text.

Appendix number	Content
2.1	Published article
2.2	Ethics approval for the systematic review
2.3	Search strategy in the systematic review
2.4	Search strategy example in MEDLINE Database
2.5	Example of the overall assessment in systematic review
3.1	Search strategy example in CINAHL
3.2	Using the JBI-QARI checklist
4.1	Notation system for MMR
4.2	Procedures and processes of MMR basic design
4.3	Ethics approval for the study
5.1	Gatekeeper letter
5.2	Participant information leaflet
5.3	Interview topic guide
5.4	Certification of workshop attendance
5.5	Interview transcription example
5.6	Example of the 'familiarisation' process in NVIVO12
7.1	Online questionnaire

7.2	Information leaflet and an A4 poster advertisement
7.3	Integration at the methods level matrix
9.1	Narrative Joint display
10.1	Draft leaflets with recommendations for employees
10.2	Draft leaflets with recommendations for employers and managers

Appendix 2

Appendix 2.1: Illustration of the published Systematic Review

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Appendix 2.2: Ethics approval for the systematic review of the study



Certificate of Ethical Approval

Applicant:

Glykeria Skamagki

Project Title:

How do employers and employees manage chronic musculoskeletal (MSK)
conditions at workplace?

This is to certify that the above named applicant has completed the Coventry
University Ethical Approval process and their project has been confirmed and
approved as Low Risk

Date of approval:

13 March 2017

Project Reference Number:

P52506

Appendix 2.3: Table showing the words used for search strategy in the systematic review

randomized controlled trial	system*
RCT	disorder*
worker*	improve
employe*	decrease
staff	cope
personnel	manage
workforce OR "work force"	prevent
"labour force"	control
strateg*	avoid
tactic*	reduce
intervention*	stop
practice	"deal with"
policy	musculoskeletal
treatment*	MSK
plan*	chronic
approach*	condition*
method*	disease*
protocol*	disorder*
musculoskeletal disorders	"ill health"
process*	illness*
system*	pathosis
improve	complaint


Appendix 2.4: Table showing a search strategy example in MEDLINE Database (01/05/2021)

Search ID#	Search Terms	Results
S1 AND S2 AND S3 AND S4 AND S5 AND S6 AND S7 AND S12 AND S13		18

S1 AND S2 AND S3 AND S4 AND S5 AND S6 AND S7 AND S12		109
S1 AND S2 AND S3 AND S4 AND S5 AND S6 AND S7 AND S11		139
S1 AND S2 AND S3 AND S4 AND S5 AND S6 AND S7 AND S10		108
S1 AND S2 AND S3 AND S4 AND S5 AND S6 AND S7		254
S1 AND S2 AND S3 AND S4 AND S5 AND S6 AND S7 AND S8 AND S9		3
S13	RCT or randomised control trial or randomized controlled trial	170.306
S12	(MM "Musculoskeletal Diseases+")	918.040
S11	(MH "Musculoskeletal Diseases+")	1.110.251
S10	(MM "Musculoskeletal Diseases")	100626
S9	(MM "Therapeutics+")	2.564.090
S8	(MM "Health Personnel+") OR (MM "Health Manpower")	391.799
S7	workplace OR work	1.239.014
S6	chronic	1.434.322
S5	condition* OR disease* OR disorder* OR "ill health" OR pathosis OR illness* OR complaint*	10.322.098

S4	MSK OR musculoskeletal OR "chronic MSK" OR "chronic musculoskeletal" OR "musculoskeletal condition*" OR "musculoskeletal disorder*" OR "MSK condition*" OR MSD* OR "chronic musculoskeletal condition*" OR "chronic musculoskeletal disorder*"	104.619
S3	manage* OR Prevent* OR cope* OR decrease* OR improve* OR control* OR handle* OR avoid* OR reduce* OR stop* OR "deal with"	11.738.407
S2	(strateg* OR tactic*) OR intervention* OR practice* OR polic* OR treatment* OR plan* OR approach* OR method* OR protocol* OR process* OR system*	17.187.298
S1	employer OR employee* OR worker* OR (workforce OR workforce) OR staff OR personnel OR ("labour force" OR labor force)	850.999

Appendix 2.5: Example of the overall assessment of the included studies reported in the systematic review using SIGN checklist

		Methodology Checklist 2: Controlled Trials	
Study identification: Baldwin et al. 2012			
Guideline topic:		Key Question No:	Reviewer:
<p>Before completing this checklist, consider:</p> <ol style="list-style-type: none"> 1. Is the paper a randomised controlled trial or a controlled clinical trial? If in doubt, check the study design algorithm available from SIGN and make sure you have the correct checklist. If it is a controlled clinical trial questions 1.2, 1.3, and 1.4 are not relevant, and the study cannot be rated higher than 1+ 2. Is the paper relevant to key question? Analyse using PICO (Patient or Population Intervention Comparison Outcome). IF NO REJECT (give reason below). IF YES complete the checklist. 			
Reason for rejection: 1. Paper not relevant to key question <input type="checkbox"/> 2. Other reason <input type="checkbox"/> (please specify):			
Section 1: Internal validity			
<i>In a well conducted RCT study...</i>		<i>Does this study do it?</i>	
1.1	The study addresses an appropriate and clearly focused question.	Yes <input type="checkbox"/> No <input type="checkbox"/> Can't say <input type="checkbox"/>	
1.2	The assignment of subjects to treatment groups is randomised.	Yes <input type="checkbox"/> No <input type="checkbox"/> Can't say <input type="checkbox"/>	
1.3	An adequate concealment method is used.	Yes <input type="checkbox"/> No <input type="checkbox"/> Can't say <input type="checkbox"/>	
1.4	The design keeps subjects and investigators 'blind' about treatment allocation.	Yes <input type="checkbox"/> No <input type="checkbox"/> Can't say <input type="checkbox"/>	

1.5	The treatment and control groups are similar at the start of the trial.	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Can't say <input type="checkbox"/>
1.6	The only difference between groups is the treatment under investigation.	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Can't say <input type="checkbox"/>
1.7	All relevant outcomes are measured in a standard, valid and reliable way.	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Can't say <input type="checkbox"/>
1.8	What percentage of the individuals or clusters recruited into each treatment arm of the study dropped out before the study was completed?	15.70%
1.9	All the subjects are analysed in the groups to which they were randomly allocated (often referred to as intention to treat analysis).	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Can't say <input type="checkbox"/> Does not apply <input type="checkbox"/>
1.10	Where the study is carried out at more than one site, results are comparable for all sites.	Yes <input type="checkbox"/> No <input type="checkbox"/> Can't say <input type="checkbox"/> Does not apply <input checked="" type="checkbox"/>

SECTION 2: OVERALL ASSESSMENT OF THE STUDY

2.1	How well was the study done to minimise bias? <i>Code as follows:</i>	High quality (++) <input type="checkbox"/> Acceptable (+) <input checked="" type="checkbox"/> Low quality (-) <input type="checkbox"/> Unacceptable – reject 0 <input type="checkbox"/>
2.2	Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the study intervention?	yes
2.3	Are the results of this study directly applicable to the patient group targeted by this guideline?	Cannot say
2.4	Heterogeneity in pain intensity and the RhA and OA levels at the beginning of the study. There were some differences at the baseline characteristics of the participants regarding education, gender, disability or pain score that may have affected the results of this study. No clear power calculation and the sample size might have been too small to detect clinical significant findings. The intervention used was not very clearly described as the ergonomic programme was tailored to each individual; some workers might have had rehabilitation interventions (e.g. Physiotherapy) whereas others had experienced only workstation assessment and changes.	

Appendix 3

Appendix 3.1: Table showing a search strategy example in CINAHL Database (10/05/2021). Combinations that produced zero results are not depicted in the table.

Search ID#	Search Terms	Results
S1 AND S2 AND S4 AND S5 AND S6 AND S7		183
S1 AND S3 AND S4 AND S5		1.527
S1 AND S2 AND S4 AND S5 AND S6 AND S7 AND S9		1
S1 AND S2 AND S4 AND S5 AND S6 AND S7 AND S10		48
S1 AND S2 AND S3 AND S4 AND S5 AND S6 AND S7		181
S10	"qualitative research" OR "qualitative study" OR "qualitative method*" OR interview* OR "focus group"	376.935
S9	"mixed methods research" OR "mixed methods research design" OR mixed methods" OR "mixed approach*" OR "mixed methodology"	10803

S7	condition* OR disease* OR disorder* OR "ill health" OR pathosis OR illness* OR complaint* OR pain	2.220.144
S6	"chronic" or "long-term"	511.368
S5	manage* OR cope* OR decrease* OR improve* OR control* OR handle* OR avoid* OR reduce* OR stop* OR "deal with"	2.576.261
S4	employee* OR worker* OR workforce OR "work force" OR staff OR personnel OR "labor force" OR laborforce OR "labour force" OR "labour force" OR work OR workplace OR job OR occupation	794.703
S3	(MM "Musculoskeletal Diseases+")	222.900
S2	"chronic musculoskeletal disorder*" OR "musculoskeletal condition*" OR MSD* OR MSDs OR "musculoskeletal pain" OR inflammatory conditions OR "inflammatory disorder*" OR "chronic musculoskeletal condition*" "musculoskeletal disorder*"	20.130
S1	belief* OR opinion* OR attitude* OR viewpoint* OR perspective* OR thought* OR expectation* OR experience*	1.109.482

	OR view* OR behavior* OR idea* OR feeling*	
--	--	--

Appendix 3.2: JBI Checklist for qualitative research (JBI 2020)

JBI CRITICAL APPRAISAL CHECKLIST FOR QUALITATIVE RESEARCH

Reviewer _____ Date _____

Author _____ Year _____ Record Number _____

	Yes	No	Unclear	Not applicable
1. Is there congruity between the stated philosophical perspective and the research methodology?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Is there congruity between the research methodology and the research question or objectives?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Is there congruity between the research methodology and the methods used to collect data?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Is there congruity between the research methodology and the representation and analysis of data?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is there congruity between the research methodology and the interpretation of results?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Is there a statement locating the researcher culturally or theoretically?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Is the influence of the researcher on the research, and vice-versa, addressed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Are participants, and their voices, adequately represented?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Overall appraisal: Include ☐ Exclude ☐ Seek further info ☐

Comments (Including reason for exclusion)

Appendix 4

Appendix 4.1: Notation system for MMR as described first by Morse (1990)The picture is taken from Creswell (2015:51)

This item has been removed due to 3rd Party Copyright. The unabridged version of the thesis can be found in the Lanchester Library, Coventry University.

**Appendix 4.2: Procedures and processes of MMR basic design.
The picture is taken from Creswell (2015:55)**

This item has been removed due to 3rd Party Copyright. The unabridged version of the thesis can be found in the Lanchester Library, Coventry University.

Appendix 4.3 Ethics approval for the MMR study



Certificate of Ethical Approval

Applicant:

Glykeria Skamagki

Project Title:

How do older employees who experience chronic musculoskeletal disorders manage their conditions at the workplace?

This is to certify that the above named applicant has completed the Coventry University Ethical Approval process and their project has been confirmed and approved as Medium Risk

Date of approval:

05 April 2018

Project Reference Number:

P68926



Certificate of Ethical Approval

Applicant:

Glykeria Skamagki

Project Title:

What are the strategies that older employees who experience chronic musculoskeletal disorders use to manage their conditions at the workplace?

This is to certify that the above named applicant has completed the Coventry University Ethical Approval process and their project has been confirmed and approved as Medium Risk

Date of approval:

29 May 2019

Project Reference Number:

P89732

Appendix 5

Appendix 5:1 Gatekeeper letter sent as an e-mail for the qualitative phase

Address of the target company

Date XX/MM/YYYY

Name of organisation/school/facility/group Dear [Name]/

Sir/ Madam

My name is Glykeria Skamagki. I am currently a PhD researcher and a Senior lecturer in the department of Physiotherapy at Coventry University. I am writing to ask your permission to contact your employees about my research project and ask them to participate in an online survey.

The project focuses on chronic musculoskeletal conditions (a range of health conditions such as upper or lower limb injuries, low back pain or other inflammatory conditions such as rheumatoid arthritis and ankylosing spondylitis) at the workplace. These conditions have a significant impact on productivity and people's working lives, as they are a source of long-term pain and can cause increased days off with sickness. In addition, the increase in the pension age in Europe may mean a higher incidence of these conditions in the workforce. The aim of this study is to give us an in-depth understanding of employees' current thoughts, experiences and actions regarding the management of musculoskeletal disorders at the workplace.

The study has received approval from Coventry University HLS Ethics and Governance Committee. The study will be using an online questionnaire called "Bristol Online Survey" that will last about 20 minutes. All I will need is for you to forward an e-mail publicising the project to your employees.

All answers will be anonymised and kept strictly confidential, and the results will be analysed to provide information for in a later stage of the research project. The names of companies will not be mentioned in any write up of the research.

I will be very happy to discuss this further with you over the phone or I could come and meet you in person. For any other information you may contact me at ab7682@coventry.ac.uk.

Sincerely,

Glykeria Skamagki

Appendix 5.2: Participant information leaflet for qualitative interviews

Participant Information Sheet

“How do older employees who experience chronic musculoskeletal disorders manage their conditions at the workplace?”

Information about the project

Musculoskeletal disorders cover a range of health conditions such as upper or lower limb injuries, low back pain or other inflammatory conditions such as rheumatoid arthritis and ankylosing spondylitis. These conditions have a significant impact on people's working lives as they are a source of long-term pain and can lead to time off work. In addition, the rise in the retirement age may mean that more people with such conditions are trying to work. Although some focus has been given into this topic, little is known about the views, the experiences and the attitudes of the ageing workforce with musculoskeletal disorders.

Why have I been chosen?

You are being invited to take part in this research because your opinion and knowledge as an active member of the ageing workforce can contribute much to the aims of this project. The purpose of the project is to explore the experiences of employees over 50 years old with chronic musculoskeletal disorders in relation to their employment and the strategies used to maintain their roles and responsibilities.

Do I have to take part?

Your participation in this research is entirely voluntary. You may change your mind later at any point of this process and withdraw.

What do I have to do?

This research will involve your participation with individual face-to face semi-structured interviews that will take about 30-60 minutes. All you should do is to make yourself available at a convenient time and place that will be arranged with the researcher to discuss your ideas and thoughts. No further commitments are required. A face-to-face interview will take place at a time and a location that is best for you. If you do not wish to answer some of the questions during the interview, you may say so and the interviewer will move on to the next question. No one else but the interviewer will be present. The interview will be recorded with the use of a Dictaphone. The recording will be confidential, and no one else but the researcher will have access to it. The recording will be kept in an encrypted drive that will be protected by password. A transcript will be made from the recording. All names and identifiable information will be removed from the transcript. The transcripts will be destroyed at the end of the project after analysis. I will not ask you to share personal beliefs, or stories and you do not have to share anything that you are not comfortable sharing.

What are the risks associated with this project?

The discussion is not on personal sensitive issues. You do not have to answer any question or take part in the interview if you don't wish to do so, and that is also fine. You do not have to give us any reason for not responding to any question or for refusing to

take part in the interview. In the rare case of distress, a list of free telephone counselling services will be provided for your own convenience.

What are the benefits of taking part?

There will be no direct benefit to you, but your participation will allow us to find out more about the experiences and the attitudes of the ageing workforce and help in the management strategies for these conditions.

Withdrawal options

You do not have to take part in this research if you do not wish to do so. You may stop participating in the interview at any time that you wish. I will give you an opportunity at the end of the interview to review your remarks, and you can ask to modify or remove portions of those, if you do not agree with my notes or if I did not understand you correctly.

Data protection & confidentiality

The information collected from this research project will be kept privately and will be protected on an encrypted drive by password. Any information about yourself will not be visible. A number or code known only to the main researcher will replace your name. Information will not be shared with or given to anyone and the transcripts will be anonymised.

What if things go wrong? Who to complain to

If you are unhappy, you may contact the principal researcher (Glykeria Skamagki) or may contact the Director of Studies of this project (Andrew King). Details are being provided at the bottom of the page. Formal complaints should be directed to Prof. Olivier Sparagano, PVC for Research, Coventry University.

What will happen with the results of the study?

The anonymised, non-identifiable data collected in the study will be analysed to identify themes, which will then be used to create a large survey. In addition, it is anticipated that the results of the study will be published in journals as well as being presented at relevant conferences. You are entitled to receive a summary of the results if you wish. At no time will any participants be identified in any report/publication.

Who has reviewed this study?

This study has been reviewed by the Director of Studies and Coventry University HLS Ethics and Governance committee

Further information/ Key contact details of researcher and supervisor Principal researcher: Glykeria Skamagki, ab7682@coventry.ac.uk

Director of Studies: Dr Andrew King hsx471@coventry.ac.uk

Appendix 5.3: Topic guide for the qualitative interviews on CMSDs

Topic 1: Workplace demands

Opening question: First of all, I would like to understand a bit better your working environment. Regardless of your occupation, you probably experience some physical and/or mental demands at work. Can you describe to me the demands you face in a typical day at work?

Topic 2: MSD and work

Based on what you just told me, how does your musculoskeletal condition influence your job?

Topic 3: Job Challenges

I understand that you have some discomfort related to work and the condition. Can you describe this experience in relation to how this might influence your daily work activities/ tasks / demands and responsibilities?

Topic 4: Strategies at the workplace

What are the strategies that you have found helpful in dealing with the challenges of your condition at the workplace?

Topic 5: Strategies outside the workplace

And what have you found to be helpful in dealing with the challenges you experience related to your condition outside the workplace?

Topic 6: Support from the organisation-employers

How has the organization (employer) you are working for supported your efforts to manage your condition at the workplace?

Topic 7: Support from the organisation-colleagues

How have your colleagues supported your efforts to manage your condition at the workplace?

Topic 8: Pension state age changes

I would like to introduce another topic here. As you must be aware, the pension state age has changed to 68 years and the government has suggested a review to increase this age by an extra 2 years. What are your thoughts and feelings (positive and negative aspects) about how these changes in pension age will affect your future working life?

Topic 9: Information and support

Given that your work life is likely to be longer than you originally expected, how do you think you will manage?

Topic 10: Messages to others

If you were to advise someone who works with a chronic musculoskeletal condition what would you like to say to them? Finish interview

Appendix 5.4: Certification of workshop attendance on qualitative interviewing



Appendix 5.5: Example of a transcribed interview

Glykeria: [00:24:37] Yes yeah. Okay now in regards to the topic of pension and the changes that are happening with the retirement age? Have you been affected with the age that you have to retire?

Interviewee 15: [00:24:53] No 65 was my retirement age when I was a young lad and fortunately it still is 65 years. I was born five days before the threshold.

Glykeria: [00:25:12] Okay well you haven't been affected but there are people over the age of 50, especially more the females that have been affected quite a lot. What is your opinion about this change for those with a CMSD?

Interviewee 15: [00:25:31] My wife is an example of... A few years ago she was going to retire at 60. She was born in 1956 you know and now her retirement age is 66 67.

pause

Interviewee 15: [00:25:57] I think for a certain group in society it is a very bad move to impose a (unknown) in increasing the pension age. Going back to the pain or fatigue I feel. I'm not sure how much of it I can attribute to age or to my condition but I know some of it probably is down to my condition...even if secondary. So I am not being able to pursue an active lifestyle so I'm probably more sedentary. I think if somebody with my condition had been forced to work longer...I think that will be a bit demotivated and struggle for some people. When, when I was diagnosed my consultant left me with the words "Keep your eyes on the horizon always keep your head up and never stoop". It might seem the more comfortable way to stand or set. So I've always tried to remember those words because I've seen conditions later to AS where people have had a spine bending, it's very obvious they have something wrong with that skeletal system. I've always endeavored to try and keep mobility to stand up right, head up and don't slouch. So I think for people like that they have a real serious disability it will be hard to continue to work until that day So I have no sympathy with the changes its not appropriate for all.

Glykeria: [00:27:52] So for yourself, you have now..?

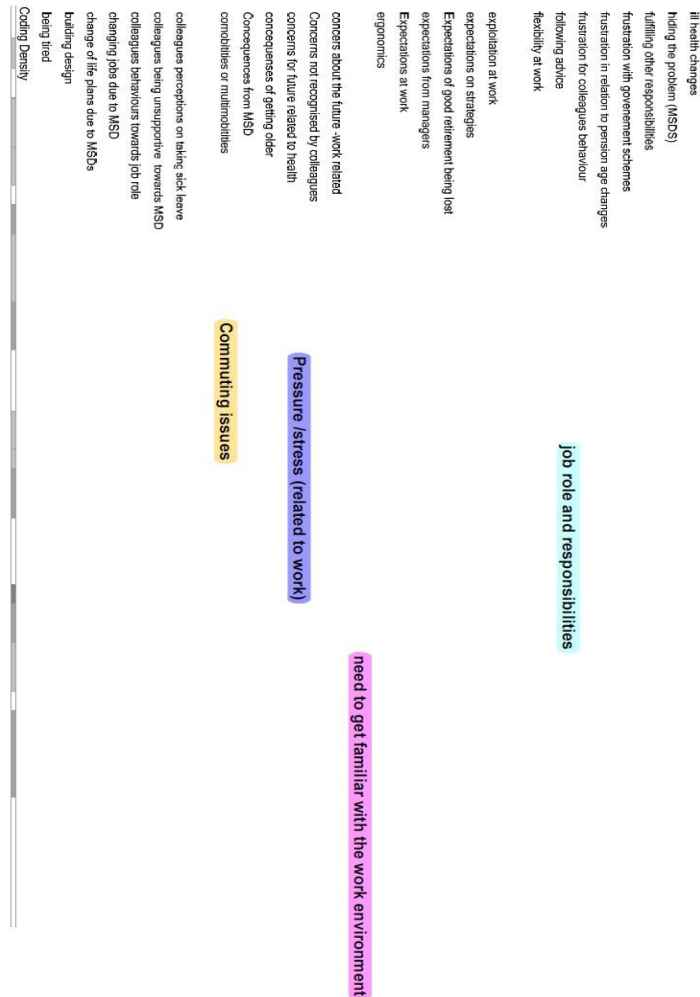
Interviewee 15: [00:28:00] four months before I could retire.

Glykeria: [00:28:02] Oh Four months, OK that's fine.

Interviewee 15: [00:28:07] July.. October. Yes. 4 months. But if that's the case and I would have to work five years more. I would. I was certainly making it clear to my employer that I... (pause) Find this again is this is a problem with actually declaring a problem because you feel it is making you more vulnerable to being chosen for redundancy or something if you are considered less effective than somebody else. But I would feel if it was going to affect my health I would have to declare that to my employer ...Maybe ask for arrangements that allow me to continue to work but don't actually require me to be there all the time or options of working from home. There are a lot of flexible options now that weren't available when I was first diagnosed. When I first went to work and was diagnosed I didn't have a personal computer. They didn't exist for anybody in the workplace. The Internet connections weren't available so you either went to work or didn't go to work. But now I can work from home some days if need to.

Appendix 5.6: Example of the 'familiarisation' process in NVIVO12

- 112: IE Well in my car it takes me 50 minutes.
- 113: GL With or without traffic?
- 114: IE That's an average. I mean when the traffic's really bad it can take longer. I have to do a bit of the M6, only two junctions, but that can be quite time-consuming. So for me, the commute's always a concern. So when I'm teaching at 9 o'clock that's a big issue, because you have to kind of get ahead of the traffic. Once you get caught in the main rush hour, I can't guarantee I'll be here on time or get parking. So parking's an issue.
- 115: So for me, when I'm actually, I have to teach at nine, I've got to be up at about quarter past, half past five in the morning, for me to get ready, get myself out and drive. And then I'll get to work for about 8 o'clock and that's fine.
- 116: But if I try to, and I have tried to tweak it and do it later, but then you don't always get here on time. So it's that side of it.
- 117: 00:02:13
- 118: And for me, I mean, I've only worked here since September, so I know the key buildings that I teach in a lot. But occasionally I suddenly get told, oh, there's been a room change and we're in such-and-such a building. And I think, oh crumbs, where's that? You know, and I don't know. And it's not always easy to find out where the other buildings are and that sort of thing.
- 119: GL In the case of your role within the university as a senior lecturer, where do you find yourself most of your time? Is it standing in the lectures? Is it sitting doing work? What do you think your role involves more?
- 120: IE Well I'm part of the practice team, so I have every teaching component and I do stand up, I don't sit when I'm teaching, and I tend to walk about; I tend to pace, like a lion. But I also have a practice role, so I spend a certain amount of my time out in practice at the various Trusts, doing workshops, visiting students, that sort of thing.
- 121: And that sort of thing's a bit different, because you're doing lots of little things and you're moving around and you're frequently moving. And I suppose, ooh, it depends on the time of year, but for me, at my desk doing admin, I'd say probably maybe two days a week, if you put it all together, would be admin. And that's sitting obviously at the desk.
- 122: 00:03:40



Appendix 7

Appendix 7.1: Online questionnaire using “Online surveys”

Page 1: Participant information statement

Musculoskeletal disorders cover a range of health conditions such as upper or lower limb injuries, low back pain or inflammatory conditions such as rheumatoid arthritis and ankylosing spondylitis. These conditions have a significant impact on people's working lives since they can be a source of long-term pain and can lead to time off work.

The rise in the state pension age may mean that more people with such conditions are trying to work to a later age. Although some attention has been given to this topic, little is known about the views, experiences and attitudes of ageing working people with musculoskeletal disorders.

The aim of this study is to explore and identify the strategies that older employees with chronic musculoskeletal disorders use to maintain their roles and responsibilities at the workplace.

You are selected to take part in this questionnaire survey because your opinion and knowledge as an active member of the ageing workforce can contribute to the aims of this project. Your participation in the survey is entirely voluntary, and you can opt out at any stage by exiting the browser. Your answers will give us an insight into the strategies of the ageing workforce towards chronic musculoskeletal disorders.

The questionnaire should take approximately 20 minutes to complete. Your answers will be treated confidentially and the information you provide will be kept anonymous in any research outputs/publications. Your anonymous data will be held securely at a personal online space (One Drive) at Coventry University, which is encrypted, and password protected. All original data will be deleted by March 2022. The project has been reviewed and approved through the formal Research Ethics procedure at Coventry University.

For further information, or if you have any queries, please contact the lead researcher Glykeria Skamagki, ab7682@coventry.ac.uk.

If you have any concerns that cannot be resolved through the lead researcher, please contact the Director of Studies of this project Dr Andrew King, hsx471@coventry.ac.uk.

By ticking the box below you agree that:

I have read and understood the above information.

I understand that, because my answers will be fully anonymised, it will not be possible to withdraw them from the study once I have completed the survey

I agree to take part in this questionnaire survey, and I confirm that I am aged 18 or over

I consent to participate in this survey

☐ Yes

Page 2: Section 1: Demographics

These are some demographic questions that will be used only for classification.

What is your age group?

- ☐ 50-55
- ☐ 56-60
- ☐ 61-65
- ☐ 66-70

Please fill in your gender

- ☐ Male
- ☐ Female
- ☐ Prefer not to say

Were you born in the UK?

- ☐ Yes
- ☐ No

Do you work in Midlands?

- ☐ Yes
- ☒ Other

If you selected Other, please specify:

In a few words, can you describe the main chronic musculoskeletal disorder (MSD) you have?

And how long have you had this musculoskeletal disorder?

- ☐ Less than 3 months
- ☐ 3-6 months
- ☐ More than 6 months
- ☐ More than 2 years

Page 3: Section Two: Employment

Which of the following best describes your present work situation? (Please choose only one)

- ☐ Employed Full-time
- ☐ Employed Part-time
- ☐ Retired

What is your job title?

In what industry do you work? (Please check the category that apply to you)

- ☐ Agriculture, Forestry, Fishing
- ☐ Mining
- ☐ Manufacturing
- ☐ Electricity, Gas, Water, Waste Services
- ☐ Construction
- ☐ Retail Trade
- ☐ Transport, Postal and Warehousing
- ☐ Financial and Insurance Services
- ☐ Professional, Scientific, Technical Services
- ☐ Administrative and Support Services
- ☐ Education and Training
- ☐ Health Care and Social Assistance
- ☐ Other Services
- ☐ Other

If you selected Other, please specify:

How long have you been employed at your current company?

- ☐ Less than a year
- ☐ 1-5 years
- ☐ More than 5 years

How many people in total work for your employer?

- ☐ 1-9
- ☐ 10-29
- ☐ 30-99
- ☐ 100-500
- ☐ More than 500

In your main job, does an average day at work involve any of the following activities? (Please check all categories that apply to you)

- ☐ Kneeling or squatting for longer than 1 hour per day in total
- ☐ Climbing a ladder
- ☐ Climbing up and down more than 30 flights of stairs per day
- ☐ Lifting weights of 10 kg or more
- ☐ Lifting weights of 2-10 kg
- ☐ Standing or walking for most of the day
- ☐ Standing or walking for more than 3 hours at a time
- ☐ Sitting for most of the day
- ☐ Driving for most of the day
- ☐ Driving towards different sites
- ☐ Driving between cities
- ☐ Repetitive or awkward movements such as twisting or bending
- ☐ Tasks that require intense concentration
- ☐ Other

If you selected Other, please specify:

Page 4: Section 3: Impact of your chronic musculoskeletal condition

How important it is for you to perform well in these different aspects of your life? (Please select one answer per row)

	(1) Not at all Important	(2) Not very Important	(3) Fairly Important	(4) Very Important	(5) Extremely Important
Job Role and work responsibilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social activities and hobbies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical activities and sports	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emotional wellbeing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Personal life and responsibilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Finances and future plans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Assume that your work ability at its best has a value of 10 points. How many points would you give your current work ability? (0 means that you cannot currently work at all)

	0	1	2	3	4	5	6	7	8	9	10	Best work ability
Completely unable to work	<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"/>	

How much did your condition interfere with your ability to work in the last 6 months?

- ☐ Not at all
- ☐ A little bit
- ☐ Moderately
- ☐ Quite a bit
- ☐ Extremely

In relation to your job role and responsibilities, how much does your health condition affect your ability to perform work tasks? (Tick at least one)

	(1) Not at all	(2) A little bit	(3) Moderately	(4) Quite a bit	(5) Extremely	Not applicable
Kneeling or squatting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Twisting or bending forward	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lifting weight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Standing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Opening jars	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Walking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sitting for prolonged period of time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Driving	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Going up/down the stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other: Work task	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you selected Other, please specify the task(s):

Page 5: Section 4: Management Pathways

Who at work do you mostly talk about your condition? * Required

- ☐ Colleagues
- ☐ Supervisor
- ☐ Line manager
- ☐ Employer
- ☐ Other 1
- ☐ Other 2

If you selected Other, please specify:

How often do you get support at work from the following individuals?

	(1) Almost Never	(2) Seldom	(3) Sometimes	(4) Often	(5) Almost Always	Not applicable
Colleagues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supervisor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Line manager	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Employer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

What strategies have you been offered in the workplace to help you manage your condition? (Please check all categories that apply to you)

- ☐ Flexible working hours
- ☐ Working from home
- ☐ Refer to occupational health
- ☐ Provide Private healthcare
- ☐ Exercise classes
- ☐ Refer to on site physiotherapy services
- ☐ Online ergonomics assessments
- ☐ Other

If you selected Other, please specify:

Please specify any strategies you were offered in your **previous** workplace (if applicable) *Optional*

How **effective** were the strategies offered to help you manage your condition in the workplace? (Please check **at least one** that applies to you)

	(1) Not at All Effective	(2) Not Very Effective	(3) Somewhat Effective	(4) Very Effective	(5) Extremely effective	Not used/Not provided
Flexible working hours	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Working from home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Refer to occupational health	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide Private healthcare	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Onsite gym/exercise classes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Refer to on-site physiotherapy services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Online ergonomics assessments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you selected Other, please specify:

How important are these strategies in helping you manage your condition? (Please select at least one that applies to you)

	(1) Not at All Important	(2) Not Very Important	(3) Fairly Important	(4) Very Important	(5) Extremely Important	Not applicable
Flexible working hours	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Working from home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Refer to occupational health	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide Private healthcare	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Onsite gym/exercise classes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Refer to on-site physiotherapy services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Online ergonomics assessments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you selected Other, please specify:

How do you manage your chronic MSD at the workplace? (Please check all categories that apply to you) * Required

- ☐ Take regular breaks
- ☐ Reduced working hours
- ☐ Use of ergonomic equipment
- ☐ Medication
- ☐ Lifestyle changes
- ☐ Meditation, Mindfulness etc.
- ☐ On site gym/exercise classes
- ☐ Visit on site healthcare professionals
- ☐ Monitor physical activity (e.g. wearable watch, phone apps)
- ☐ Other

If you selected Other, please specify:

If you selected "Lifestyle changes", please specify Optional

Have you ever used any of the following strategies to help you manage your condition? (Select all that apply)

- ☐ Physiotherapy
- ☐ Sports therapy
- ☐ Massage
- ☐ Acupuncture
- ☐ Exercises
- ☐ Pilates
- ☐ Yoga
- ☐ Aromatherapy
- ☐ Swimming pool
- ☐ Ergonomic pillow
- ☐ Ergonomic chair
- ☐ Standing up desk
- ☐ Splints
- ☐ Vitamins and supplements
- ☐ Other

If you selected Other, please specify: *Optional*

How important are these strategies for the management of your condition? (Please check **at least one**)

	(1) Not at All Important	(2) Not Very Important	(3) Fairly Important	(4) Very Important	(5) Extremely Important	Not used/Not applicable
Take regular breaks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduced working hours	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use of ergonomic equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Medication	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lifestyle changes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Psychological techniques	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
See on-site healthcare professional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use of gym/exercise classes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you selected Other, please specify

We would like to know how satisfied you are with the support you get at work. Please indicate the degree of agreement with the statements below

	(1) Strongly Disagree	(2) Disagree	(3) Neutral	(4) Agree	(5) Strongly Agree	Not applicable
My employer supports me to manage my condition at the workplace	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My line manager supports me to manage my condition at the workplace	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am satisfied with the strategies offered at my workplace to manage my condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My colleagues do not recognise/understand my condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am aware of the support I can get at the workplace	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My line manager is aware of my condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My employer is aware of my condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My colleagues are helpful and supportive when I am not feeling well	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My employer does not recognise/understand my condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My line manager does not recognise/understand my condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

What strategies would you liked to have been offered at the workplace? *Optional*

Page 6: Section 5: Barriers

We would like to know your thoughts about some factors that can affect how you manage your condition at work. Please indicate the degree of agreement with the statements below. (Please check **at least one**)

	(1) Strongly Disagree	(2) Disagree	(3) Neutral	(4) Agree	(5) Strongly Agree	Not applicable
My workstation requires alterations to accommodate my needs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have discussed my needs with the Occupational Health team at my workplace	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I do not like others to know about my condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know what is offered at the workplace to manage my condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Managing my condition at the workplace can reduce the burden on the NHS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have access to occupational health or other health professionals at my workplace	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
People at work are well-educated about chronic musculoskeletal conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I believe that my organisation values the employees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have quick access to different healthcare professionals through the NHS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is very important to self-manage my condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Similarly, please indicate how often the following occur.

	(1) Almost Never	(2) Seldom	(3) Sometimes	(4) Often	(5) Almost Always	Not applicable
On a normal day I work with pain or discomfort	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I take sick leave when I am not feeling well	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I ask my colleagues to help me with a task I cannot perform at work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would pay privately to see a healthcare professional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I find time to self-manage my condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I stay at work even on the days i feel unwell	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My condition affects my work abilities and performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I consult my local GP to discuss my condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please indicate how much you agree with the statements below. (Please check **at least one**)

	(1) Strongly Disagree	(2) Disagree	(3) Neutral	(4) Agree	(5) Strongly Agree	Not applicable
My condition makes me depressed (feeling sad)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am happy with the support I get from my organisation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel confident that older employees with chronic MSDs are well supported	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am afraid to reveal my condition to my employer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am happy with the support I get from the NHS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am confident that I can manage my condition well	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel hopeless about my future due to my condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel frustrated when my colleagues do not understand my needs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel confident to discuss my needs with my line manager	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel frustrated when I cannot perform well at my job	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Page 7: Section 6: Future Plans

The Retirement age and the State Pension Age has changed for both men and women. Although there is no longer a law that states that you have to retire at a certain age, the Government is planning further increases of the State Pension Age from 66 to 68 years. Please indicate how much you agree with the statements below.

	(1) Strongly Disagree	(2) Disagree	(3) Neutral	(4) Agree	(5) Strongly Agree	Not applicable
I am adequately informed about the pension age changes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel confident that I can work until my State Pension Age	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Changes to the State Pension Age would impact my ability to enjoy retirement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have a plan of how I will manage my condition until I retire	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am worried about my future employment due to my condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am confident that I can manage my finances well	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Do you expect to carry out the same type of work until you retire? * *Required*

- ☐ Yes
- ☐ No
- ☐ Not Sure

Can you briefly explain your answer? *Optional*

Is there anything else you would like to add?

Appendix 7.2: information leaflet and an A4 poster advertisement

INVITATION TO PARTICIPATE IN RESEARCH



Research Project on Chronic Musculoskeletal Conditions at the workplace

We are looking for employees over the age of 50 to **take part** in a survey exploring and identifying the strategies that older employees use to manage chronic musculoskeletal conditions at the workplace. Your opinion and knowledge as an active member of the ageing workforce can contribute much to the aims of this project.

As a participant in this study, you would be asked to complete an online questionnaire that will last approximately 20 minutes. Your participation in the survey is **entirely voluntary**, and you can opt out at any stage.

To participate or learn more about this study you can follow this link

<https://coventry.onlinesurveys.ac.uk/survey-on-chronic-musculoskeletal-disorders>

or scan the **QR-Code** below:



More information
please contact:

Principal Investigator:

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Senior Lecturer in Physiotherapy
Coventry University



Appendix 7.3: Integration at the methods level matrix

Main themes and categories	Explanation	Response Format	Item Content	Question No
Impact on wellness <ul style="list-style-type: none"> • Work performance • Physical issues • Mental stressors • Personal life 	Focuses on how CMSD affected different areas of the participants' lives and wellness.	Evaluative (Not at all Important to Extremely important)	Rate the importance of personal perform well in these different key aspects of your life	Q17
Impact on wellness <ul style="list-style-type: none"> • Work performance 	Focuses on how CMSD affected work performance	Evaluative (cannot currently work at all to best work ability)	Assess the work ability on a 10-point scale	Q18
		Evaluative (Not at all to Extremely)	Assess the work performance in the past 6 months	Q19
		Evaluative (Not at all to Extremely)	Assess how much the specific work tasks have been affected by the CMSD	Q20
Strategies and facilitators that support managing a CSMD	Explores the points of support and strategies that participants used to			

<ul style="list-style-type: none"> • Taking a healthy approach • Strategies offered at work • Supportive environment 	manage their conditions at the workplace.	Descriptive (Staff members)	Identify who in the workplace who acts as a point of support	Q21
<p>Strategies and facilitators that support managing a CSMD</p> <ul style="list-style-type: none"> • Taking a healthy approach • Strategies offered at work • Supportive environment • Managing the condition outside the workplace 	Explores the points of support and strategies that participants used to manage their conditions at the workplace.	Reporting (Almost never to almost always)	Frequency getting support by members of the team in the workplace	Q22
<p>Strategies and facilitators that support managing a CSMD</p> <ul style="list-style-type: none"> • Taking a healthy approach • Strategies offered at work • Supportive environment 	Explores strategies offered to manage their conditions at the workplace.	Descriptive (Strategies describes in QUAL phase)	Identify the strategies offered in the workplace	Q23
<p>Strategies and facilitators that support managing a CSMD</p> <ul style="list-style-type: none"> • Taking a healthy approach • Strategies offered at work • Supportive environment • Managing the condition outside the workplace <p>Employees' approach to living with a CSMD</p> <ul style="list-style-type: none"> • Work ethic 	<p>Explores the points of support and strategies that participants used to manage their conditions at the workplace.</p> <p>Attitudes and emotions of the participants towards current and future work.</p>	Evaluative (Not at all effective to Extremely effective)	Rate the perceived effectiveness the strategies offered in the workplace	Q24

<ul style="list-style-type: none"> • Take responsibility for self-management • Attitudes on management strategies • Disclosing the condition 				
<p>Strategies and facilitators that support managing a CSMD</p> <ul style="list-style-type: none"> • Taking a healthy approach • Strategies offered at work 	Explores the points of support and strategies that participants used to manage their conditions at the workplace.	Evaluative (Not at all Important to Extremely important)	Rate the importance of the strategies offered in the workplace	Q25
<p>Strategies and facilitators that support managing a CSMD</p> <ul style="list-style-type: none"> • Taking a healthy approach • Strategies offered at work • Managing the condition outside the workplace <p>Employees' approach to living with a CSMD</p> <ul style="list-style-type: none"> • Work ethic • Attitudes on management strategies • Take responsibility for self-management • Disclosing the condition 	<p>Explores participants' strategies to manage their conditions at the workplace.</p> <p>Attitudes and behaviours of the participants towards strategies.</p>	Descriptive (Strategies describes in QUAL phase)	Identify the strategies used in the workplace	Q26, Q27
<p>Strategies and facilitators that support managing a CSMD</p> <ul style="list-style-type: none"> • Taking a healthy approach • Strategies offered at work • Managing the condition outside the workplace 	Explores participants' strategies to manage their conditions at the workplace.	Evaluative (Not at all Important to Extremely important)	Rate the importance of the strategies participants choose to use in the workplace	Q28

<p>Employees' attitudes at strategies</p> <ul style="list-style-type: none"> • Work ethic • Attitudes on management strategies • Take responsibility for self-management • Disclosing the condition 	<p>Attitudes and behaviours of the participants towards strategies.</p>			
<p>Perceived barriers related to management</p> <ul style="list-style-type: none"> • Workstation design and environment • Bureaucracy and procedures • Unsupportive Colleagues' • Barriers with the management team • Healthcare System <p>Employees' approach to living with a CMSD</p> <ul style="list-style-type: none"> • Work ethic • Take responsibility for self-management • Managing the condition outside the workplace • Disclosing the condition <p>Strategies and facilitators that support managing a CSMD</p>	<p>Employees described the barriers towards the management of their condition.</p> <p>Attitudes and behaviours of the participants towards strategies.</p> <p>Explores the points of support and strategies that participants used to manage their conditions at the workplace.</p>	<p>Reporting (Strongly Disagree to Strongly agree)</p>	<p>Identify and categorise the obstacles that employees over the age of 50 experience in managing a CMSD in the workplace</p>	<p>Q29</p>

<ul style="list-style-type: none"> • Taking a healthy approach • Strategies offered at work • Supportive environment • Managing the condition outside the workplace 				
<p>Perceived barriers related to management</p> <ul style="list-style-type: none"> • Workstation design and environment • Bureaucracy and procedures • Unsupportive Colleagues' • Barriers with the management team • Healthcare System <p>Employees' approach to living with a CMSD</p> <ul style="list-style-type: none"> • Work ethic • Attitudes on management strategies • Take responsibility for self-management • Disclosing the condition <p>Strategies and facilitators that support managing a CSMD</p> <ul style="list-style-type: none"> • Taking a healthy approach • Strategies offered at work • Supportive environment • Managing the condition outside the workplace 	<p>Employees described the barriers towards the management of their condition.</p> <p>Attitudes and behaviours of the participants towards strategies.</p> <p>Explores the points of support and strategies that participants used to manage their conditions at the workplace.</p>	<p>Reporting (Strongly Disagree to Strongly agree)</p>	<p>Identify the degree of agreement with the statements related to obstacles in the management of the CMSD</p>	<p>Q31, Q33</p>

<p>Perceived barriers related to management</p> <ul style="list-style-type: none"> • Workstation design and environment • Bureaucracy and procedures • Unsupportive Colleagues' • Barriers with the management team • Healthcare System <p>Employees' approach to living with a CMSD</p> <ul style="list-style-type: none"> • Work ethic • Attitudes on management strategies • Take responsibility for self-management • Disclosing the condition <p>Emotions and beliefs about future employment and retirement</p> <ul style="list-style-type: none"> • Fear of employment • Motivation to work longer • Government changes and healthy retirement 	<p>Employees described the barriers towards the management of their condition.</p> <p>Attitudes and behaviours of the participants towards strategies.</p> <p>Thoughts and emotions of the participants towards current and future work/work behaviour.</p>	<p>Reporting</p> <p>(Almost never to almost always)</p>	<p>Frequency of obstacles related to the management of the CMSD in the workplace</p>	<p>Q32</p>
<p>Strategies and facilitators that support managing a CSMD</p> <ul style="list-style-type: none"> • Taking a healthy approach • Strategies offered at work • Supportive environment 	<p>Explores participants strategies to maintain their health and plan for their future</p>	<p>Reporting</p>	<p>Identify the degree of agreement with the statements related</p>	<p>Q34</p>

<ul style="list-style-type: none"> Managing the condition outside the workplace 	Attitudes and emotions of the participants towards current and future work/work behaviour.	(Strongly Disagree to Strongly agree)	to pension and future plans	
<p>Strategies and facilitators that support managing a CSMD</p> <ul style="list-style-type: none"> Taking a healthy approach Strategies offered at work Supportive environment Managing the condition outside the workplace 	<p>Explores participants strategies to maintain their health and plan for their future</p> <p>Thoughts and emotions of the participants towards current and future work/work behaviour.</p>	<p>Reporting</p> <p>(yes, no, I do not know)</p>	Identify the number of employees who will stay at work until retirement	Q35

Appendix 9

Appendix 9.1: Integration of qualitative and quantitative findings in a joint display matrix

Overarching themes	Categories	Quantitative findings	Qualitative findings	Meta-inferences and Interpretation	
Impact on wellness		53% (N=57/107) declared poor work ability	I mean I ruined my hands working with no support for about 20 years. That is why I am worse now. (Josh)	Convergence	Participants identified that work ability was affected in diverse levels. This was also confirmed by the quantitative responses.

Impact on wellness	Work performance	60% (N=64/107) reported that the CMSD interfered 'quite a lot/Extremely' with their ability to effectively work during the past six months	I don't know how much it really affects me now. I guess it affected me when I was having to go and have some physio a few times. [before Christmas around 6 months ago] (Kathryn)	Convergence Expansion	Both sets of findings demonstrated that work was affected in the past 6 months. Work ability was affected differently for the employees in the study. The condition fluctuates through the year due to the type of the CMSD, the use of medication, the job role they have and other factors affecting the intensity e.g. stress, depression, comorbidities, flare-ups.
	Work performance	80% (N=86/107) reported that is 'very' to 'extremely important' to perform well within their job	I like working, and as long as I am well enough to do it and do it well- so you can still have some pride in what you are doing- I want to keep working. (Laura)	Convergence Expansion	Work is an important area for the majority of these employees. Most of the respondents in the survey confirmed the importance to perform their role well. Participants in the interviews explained that are motivated to work but they need to be healthy. The discussed the importance of work and life balance and how health is the most important factor.
		56% (N=60/107) recognised that CMSDs affected their	Well, when you have arthritis in your hands you tend to lose the strength. Because most of the time it	Convergence	Participants in the qualitative study were aware of the work tasks they were mostly affected due to CMSDs. This

Impact on wellness		work abilities and performance	was quite physical work, I found it (pause) like, I work with a range of tools so like spanners and screwdrivers and occasionally I'd find that i can't grip. (John)		was partially confirmed with the respondents of the survey.
	Physical issues	50% (N=53/107) sit, 35% (N=38/107) standing, 40% (N=42/107) kneeling/squatting, 24% (N=26/107) lifting, 34% (N=36/107) twisting/bending, 29% (N=31/107) walking, 29% (N=31/107) driving, 24% (N=26/107) using the stairs, 14% (N=15/107) opening jars 53% (N=57/107) other	<u>One example given</u> Sometimes I go to meetings, and if there are steps, then I will just say that I've got mobility issues so I will take the lift. A couple of steps I can manage, but if it is a lot of steps, it just takes me ages to get to them. (Sally)	Convergence	Employees in this study discussed and selected a variety of movements, positions and tasks that have been affected due to the CMSD.

Impact on wellness	Mental stressors	58% (N=62/107) felt sad (depressed)	<p>I mean having a knee like this is quite depressing. Like I said before, it does reduce your quality of life and not being able to get out of bed for like 10 minutes, you know, you think "oh I can't be having this every morning".</p> <p>So yes, it can interfere with your mental wellbeing. (Annette)</p>	<p>Convergence</p> <p>Expansion</p>	<p>Some respondents demonstrated the connection between CMSDs and mental health. This was confirmed in the qualitative findings.</p> <p>Participants explained that mental health deteriorated mainly because they were concerned about their abilities and performance. Other discussed the condition itself and their worries of the condition and its progression.</p>
		92% (N=98/107) indicated the importance of emotional wellbeing	<p>And I think when mentally you're feeling kind of under pressure then that kind of makes you feel physically more tired, physically more kind of, you know, sort of struggling a little bit. (Claire)</p>	Convergence	All qualitative findings and the majority of quantitative responses stressed the importance of emotional and mental health.

	Personal life	92% (N=98/107) indicated the importance of balancing work and personal life	It's difficult because I'm a single parent as well. On top of that I've signed up to do a part time degree. I am not putting my personal life on the side. But then, I would like to keep working as long as I possibly can.(Sarah)	Convergence	In qualitative findings participants explained the importance of personal and social life which was confirmed by the survey responses.
Strategies and facilitators that support managing a CSMD	Taking a healthy approach	25% (N=27/107) monitor their physical activity 33% (N=35/107) made lifestyles changes 12% (N=13/107) used a gym 18% (N=19/107) used psychological techniques	(One example given) So, it tells me, "come on you have got only done so many steps this hour get up and move". I also tend to – if I go to the toilet - to try and go to the floor downstairs and then walk back up. (Laura)	Convergence Expansion	Employees in this study valued self-management and highlighted the necessity of taking health into their own hands. Participants reported that it was unclear to them how to choose a healthy approach, for example, how to exercise effectively for the management of their condition or what they could safely do at the gym.

Strategies and facilitators that support managing a CSMD	Strategies offered at work	23% (N=31/107) OHS, 17% (N=18/107) online occupational health assessment, 19% (N=21/107) on-site physiotherapy clinic, 10% (N=11/107) private healthcare provider, 26% (N=28/107) working flexible hours, 19% (N=21/107) worked from home, 10% (N=11/107) provided with a gym/space for exercises	<p><u>Two examples given</u></p> <p>Well you have to do a DSE assessment when you come in [start employment] anyway. So, I actually got two screens and that thing that supports your lumbar spine. That's all from work and I got a footstool too. (Josh)</p> <p>So basically, you just have to look outside the workplace, go to your doctor who will refer you to physio and take it from there. (Annette)</p>	<p>Convergence</p> <p>Divergence</p> <p>Expansion</p>	<p>Both qualitative and quantitative findings demonstrate a variety of strategies that were offered to employees.</p> <p>Findings also demonstrated that not everyone was offered strategies to manage the CSMD.</p> <p>Participants discussed differences between industries, type of job and management teams as important factors.</p>
	Supportive environment	35% (N=38/107) got support from their colleagues	We're a very small team. We've worked together for quite a long time, so in general the team was very supportive of any issues that any of us have. We all have the occasional aches and pains and so on and so	<p>Convergence</p> <p>Divergence</p> <p>Expansion</p>	There are areas of both agreement and disagreement demonstrating that not everyone encountered support from colleagues.

Strategies and facilitators that support managing a CSMD	Supportive environment		<p>forth so there's never been an issue. (Kathryn)</p> <p>I don't think it really changed into anything (telling them about the MSD). I mean basically I very much feel like if I'm not here there's nobody to help or to cover. (Nicky)</p>		Findings from the qualitative phase explain that colleagues are supportive or empathetic only when they are personally involved with the employee or the can empathise due to personal experience.
		51% (N=54/107) declared frequent support from colleagues		No fit	No one in the qualitative phase discuss frequency of support
		26% (N=28/107) felt happy with the support they get from their organisation to manage the CMSD	<p>My manager is pretty supportive because he gets the view that he does not want to lose his guys as a result of an injury... if I needed to take time off to get things sorted out with my back, I could, and that was always seen as a benefit to the company, to keep you at work. (John)</p> <p>My manager told me that I may do less hours, although that was taken away after 2</p>	<p>Convergence</p> <p>Divergence</p>	There are areas of both agreement and disagreement demonstrating that not all organisations supported older employees with the management of CMSD. Therefore, only employees who were supported felt happy with their employer.

Strategies and facilitators that support managing a CSMD	Supportive environment		<p>weeks. It was like: "Oh, let's meet again and see what we can do because your condition is long-term". And then when I asked to review this, I'm not given a meeting with the manager. Nothing. It was just like: "No". And that's how it was left.</p> <p>(Anne)</p>		
		40% (N=42/107) of respondents felt valued by their employer	<p>The employer is quite accepting about [my condition] because I was always very honest about it from the start. But they appreciate me, and they say that I do an awful lot of things that others would not do. (Jessica)</p> <p>And you end up being a slave to the company that you're working for, but they will kick you out into the street as soon as you are no longer useful to them. (Kathryn)</p>	<p>Convergence</p> <p>Divergence</p> <p>Expansion</p>	<p>There are areas of both agreement and disagreement demonstrating that not all organisations valued their employees.</p> <p>Recognition of the employees and their work ethic and abilities was highlighted. This was important to help the mental stresses and enhance self-confidence of the older workforce.</p>
		30% (N=32/107) were satisfied with the support received by the employer	<p>I've done my workstation assessment thing. It was quite useful, because I find it quite difficult getting</p>	<p>Convergence</p> <p>Divergence</p>	<p>There are areas of both agreement and disagreement demonstrating that not</p>

Strategies and facilitators that support managing a CSMD	Supportive environment		comfortable in my chair and in fact it was quite useful to have done that sort of assessment. (Claire) My boss's boss refused to get kit, despite the fact that it was necessary. It should belong to you, before you actually started work. This guy wouldn't spend it. (Josh)	Expansion	everyone was satisfied with the support they got. Employees offered supportive strategies were pleased with their employers and their line managers. They expressed that they were valuable member of the organisation.
		7% (N=7/107) would often get support from their employer		No fit	No indication of frequency of support
		42% (N=44/107) indicated that they were informed about the strategies available for them	Yes, that was the one. I mean i did not think someone sent me to the occupational health, I think I knew I was entitled to it and got a referral from my GP. (Teresa)	Expansion	It is unclear if the strategies were received after disclosure or were identified in the beginning of the employment. Findings did not clearly demonstrate that the employees of this study were informed of what is available to them.

Strategies and facilitators that support managing a CSMD		30% (N=32/107) would get help from their supervisor/line manager	<p>I negotiated with the manager whether, because I do a lot of admin, whether I could work from home one day a week. And she agreed to that because that just means I haven't got my commute, which is a bit of a nightmare. (Claire)</p> <p>You know the managers do not very much help at all actually. And I've spoken to several line managers on several occasions because my previous line manager left. (Teresa)</p>	<p>Convergence</p> <p>Divergence</p> <p>Expansion</p>	<p>There are areas of both agreement and disagreement demonstrating that not all line managers were supportive.</p> <p>Employees identified a helpful line manager someone who can listen and be flexible with their needs. It is unclear if line managers are aware of the organisational policies but do not provide help or if they were not aware of what can be offered in the workplace and that's why they did not provide support.</p>
	Managing the condition outside of the workplace	<p>79% (N=66/84) consulted a physiotherapist</p> <p>70% (N=52/75) used passive strategies</p> <p>46% (N=22/49) accessed alternative therapies</p>	<p>My physiotherapist is very good. She listens, she understands, and I am happy with the treatment that I have had. And also, the consultant gave me the first steroid injection in February which has lasted a long time (Annette)</p>	<p>Convergence</p> <p>Divergence</p>	<p>There are areas of both agreement and disagreement demonstrating that not all employees were motivated to manage their condition at their own time.</p>

		<p>12% (N=2/13) used exercise</p> <p>49% (N=26/52) preferred swimming</p> <p>61% (N=40/65) used other self-paid strategies</p>	<p>No, I haven't been doing anything unfortunately. I am thinking to go to the Yoga, but it depends what I'm doing. And I did register at the weight thing (mobile app) but that kind of put me off because it was just a hassle in a way to constantly keep updating it. (Debra)</p>	Expansion	<p>Employees were motivated to continue self-management outside workplace with mainly paid services and passive strategies.</p>
Perceived barriers towards management	Workstation design and environment	<p>54% (N=58/107) reported that their workstation needs alterations to accommodate their needs</p>	<p>I think the big disadvantage of 'agile working' (hotdesking) is that there's no stationary position. (Sally)</p>	<p>Convergence</p> <p>Expansion</p>	<p>Employees in this study confirmed that their workstation is not appropriate if their health needs.</p> <p>New office trends do not consider people with CMDSs. These trends are inflexible and focus on the "one size fits all" which is not always appropriate. These trends include hot desking, open plan offices, use your own device policies.</p>
	Bureaucracy and procedures	<p>42% (N=44/107) had not discussed their needs with the OHS</p>	<p>I haven't been asked anything and nothing and nobody sat down with me and said "OK what is your condition, how bad is it, does it affect your work? Or is there anything else that</p>	<p>Convergence</p> <p>Divergence</p>	<p>There are areas of both agreement and disagreement demonstrating that not all employees had discussed their needs with OHS.</p>

Perceived barriers towards management	Bureaucracy and procedures		<p>we need to do" so it has been said nothing along those lines. (Kathryn)</p> <p>I had an input from occupational health, they got me a better desk a better chair office chair and a working graphics tablet. (Josh)</p>	Expansion	In some organisations the OHS did not have healthcare professionals but followed a rotational secondments protocol. Employees in this study were reluctant to discuss their condition with non-healthcare professionals. Findings also demonstrated that online OHS had replaced the physical visits.
		32% (N=40/107) did not have access to an OHS or other healthcare professionals in the workplace	<p>But unfortunately, they do not, they just have occupational health leaflets-only to advice on what to do. So basically, you just have to look outside the workplace, go to your doctor who will refer you to physio and take it from there. (Annette)</p> <p>Yes, you have an online form to fill in and if you've got any queries at all, they (occupational team) come and sort it out for you. (Andrew)</p>	<p>Convergence</p> <p>Divergence</p> <p>Expansion</p>	<p>There are areas of both agreement and disagreement demonstrating that not all employees had access at the appropriate time with OHS.</p> <p>In some organisations there was no OHS or other HCPs available on site. However, even in those who had these services available employees had difficulty accessing the service as for example, it appeared to be a time-consuming process. Findings also explained that OHS visits were limited in time and in frequency.</p>
	Unsupportive Colleagues'	22% (N=23/107) indicated that almost	We've got given a locker, and I'm like: why was mine	Convergence	There are areas of both agreement and

Perceived barriers towards management	Unsupportive Colleagues'	never or seldom they got support from their colleagues	way up high? So, that was hurting my shoulder by having to hoist everything up into there..." So, they really didn't ask people "Have you got anything that would stop you having lockers up, lockers down? My manager did go around and ask everybody "would somebody swap"? And no one wanted to swap with me. (Anne)	Divergence	disagreement, demonstrating that only some employees in this sample got support from their colleagues.
			Generally, quite supportive. Everybody has issues of one sort or another, so, I think on a personal level between me and my colleagues there was never any trouble. (Andrew)	Expansion	Colleagues who are not educated about CMSDs or had no experience of them are unsupportive and do not empathise.
		35% (N=37/107) declared that colleagues do not understand or recognise the impact of a CMSD at work	And the other thing is that people react differently because it's psoriatic. I have to say that word, and I hate that word. Whereas if I said, oh, I've got osteoarthritis or rheumatoid arthritis people understand that and know that better. So, I say arthritis, but	Convergence	Findings from both qualitative and quantitative phases confirmed that not everyone is educated about CMSDs.
				Expansion	Especially if a condition is not well-known, then people may be unaware about its symptoms, signs and the

Perceived barriers towards management			sometimes people say, "what sort?" and then I have to explain. And they just don't get that either. (Debra)		needs that affected people have.
		60% (N=50/107) was upset when their colleagues did not appear to understand their needs	It's just a question of people who tend to make plans for you without asking you first or complain to the manager because you have been given some flexibility. That upsets me a lot. (Jack)	Convergence	Findings from both qualitative and quantitative phases confirmed that employees in this study were frustrated when other colleagues did not understand their needs.
		56% (N=60/107) reported that people are not well educated about CMSDs	So, not many know (that I have PA), but when you do tell people I think because I seem quite fit and healthy, they just... I just think people don't understand it at all. (Debra)	Convergence Expansion	Employees in this study believed that people are not well educated about CMSDs. Even in well-known health conditions participants explained that people filter the information out since it is not affecting them directly.
	Interaction with the management team	24% (N=26/107) indicated that 'nothing was provided' to assist them in managing the CMSD in the workplace	Well my workplace... Nothing really. Well yes, it is like a very small manufacturing workshop really. Because I worked at the big companies where i know how things work you know from very small to very big. So, my actual employer didn't really...	Convergence Divergence	There are areas of both agreement and disagreement demonstrating that some workplace do not offer any strategies for management. Although it would be expected that large

Perceived barriers towards management	Interaction with the management team		<p>i do not know what he could offer me really. (John)</p> <p>I know that I could go for an occupational health assessment... So, I was talking to my manager saying that we'll fill it in because it lists all the things that you're affected by and how they impact on you and what work you can do. And then it follows you so if you change job your new manager knows and understands your conditions. (Debra)</p>	Expansion	companies offer more strategies, this was not demonstrated within the data collected showing even large companies were unsupportive/not offering strategies towards employees with CMSDS.
		25% (N=26/107) believed that their line manager did not actually recognise or understand the condition	<p>I think the managers are under a lot of pressure and I don't think that they always have an awful lot of capacity to deal with people that can't just fit into a standard box for them. (Jessica)</p> <p>My supervisor is very good. He said well "yeah just take five 10 minutes get a drink</p>	<p>Convergence</p> <p>Divergence</p> <p>Expansion</p>	<p>There are areas of both agreement and disagreement demonstrating that employees in this study believed that their line manager does not understand CMSDs.</p> <p>The role of the line manager is important. LMs can facilitate and guide the</p>

Perceived barriers towards management	Interaction with the management team		of water and to sit down and then see how you feel. You don't feel too good go home." Which is very good of him you know. I mean here they're pretty good at that sort of thing. They want you to get better so you can get back to work. (Annette)		employee towards the strategies. They are the gatekeepers of the available strategies. Regular check-in by the management team could increase satisfaction and allow better support.
		12% (N=13/107) identified that older employees with CMSDs are supported in the workplace	I just think employers should really take on board that you know, you are also getting older and will not perform well. I know a lot of places do not, but they should offer more sort of like in house can I say services, like therapy. Instead of having to go to your doctor's and getting referred. (Annette)	Complementarity	Qualitative findings suggest organisations and employers do not provide sustainable employment as they do not respond to changes such as ageing, governmental changes and new working trends.
		26% (N=28/107) reported that their employer did not recognise or understood the CMSD	Yes, I don't think so I think there's a much greater awareness from employers that some of their employees do have like you say chronic conditions. (Debra)	Convergence Divergence Expansion	There are areas of both agreement and disagreement demonstrating that some employees did not feel that employers have an understanding of their condition.

			I feel I should say that it's more acceptable to have a chronic condition now. And its sort of not judged negatively. But I still think about it and I do worry that if I did say that I was disabled when I went for another jobs, I would be looked on less favourably (Kathryn)		This is common when employers do not offer strategies and both employers and line managers avoid health conversations. Participants in qualitative study expressed that the line manager is the face of the employer.
	Healthcare System	24% (N=25/107) were happy with the support they get from the NHS	So, I got to the physio for my arthritis, and she was marvellous with my wrists. But my arthritis affected my knees and my feet, and when I went back there she said: "Oh, you've only been referred for your wrists, you haven't got the funding". (Anne)	Convergence Expansion	Both findings demonstrated that employees in this study support the NHS and have faith in it. Some were dissatisfied when their GP could not advise them or support them in relation to work. Others due to bureaucracy.
		69% (N=73/107) recognised that managing the condition at the workplace could potentially reduce the burden on the NHS	I think if you've gone into a health crisis with something that is affecting your mobility you need get treatment fast so you can cope well enough to get back into the workplace. The trouble for me was that at the NHS the waiting were very long that they'll be even longer now. But if I got	Convergence Expansion	Both findings confirmed that NHS is not supporting them as it should. The use of supportive strategies in the workplace can take some weight away from the NHS.

	Healthcare System		treatment at work then I would go back quicker and manage better. (Nicky)		
		55% (N=58/107) did not have quick access to healthcare professionals through the NHS	When I first had my arthritis for years I'd go to the GP and complain and say "look, these are my symptoms and my pain is severe and so on" and they'd say, "oh, we can't see anything your rheumatoid factor isn't high, it's nothing". (Debra)	Convergence	Employees value the NHS but access to healthcare in an appropriate time is not guaranteed.
Employees' approach towards the condition	Work ethic	73% (N=78/107) of respondents indicated that they work with ongoing pain or discomfort	I think the trouble is, when you have a condition like the one I've have all my adult life, you tend to get quite resilient. So if I had a pain in my knee I would still come into work. (Claire)	Convergence Expansion	Employees would work with pain and would not take sick leave increasing the presenteeism rates. Participants in the qualitative phase explained that they are often in pain/have symptoms thus they got used to work and live with it.
		74% (N=79/107) reported that they	Yes, I would work with pain. Because it's been a feature	Convergence	Both findings demonstrate that employees in this study

Employees' approach towards the condition	Work ethic	would remain at work even on the days they felt unwell	of my life that I've just got used to having, you know. (Sally)	Expansion	would remain at work with pain. Employees value work and show dedication 2%.
		20% (N=21/107) reported that they would ask their colleagues to help them with a task if they were unable to perform well.	But if there is like a colleague in the company, you know, some else in the office and i will either ask them to support or ask if they can do it for me. (Sarah)	Convergence Expansion	Both results demonstrated that some employees in this study would ask for help if they had to. This group has high pain/symptom threshold and pride. They would not ask for help from their colleagues unless its absolutely necessary.
		2% (N=2/107) indicated that they would take sick leave when they were not feeling well.	My work ethic is work. You know I don't like to have time off, i have never had time off with my knee. I've always managed it with painkillers, steroid injections, physiotherapy. Since I can manage my arthritis I can work. (Annette)	Divergence Expansion	All qualitative findings and 98% of the quantitative findings share the opinion that they would not take sick leave. If the management team and the employer are not aware of the condition or not empathetic about CMSDs then employees avoid taking sick leave and will work with pain.

Employees' approach towards the condition	Attitudes on management strategies	30% (N=8/28) flexible working hours were perceived as effective	I might not work until 11:00 o'clock in the morning and then I might go through to 7-8 o'clock. (Sally)	Convergence Expansion	Employees in this study have found a variety of strategies offered to be effective. Employees valued the strategies if they were or relevant for the required task/role and condition.
		34% (N=7/21) working from home was perceived effective	I negotiated with the manager whether, because I a lot of admin, whether I could work from home one day a week. (Claire)	Convergence	Employees in this study have found flexible working from home as an effective strategy.
		30% (N=9/31) refer to OHS was perceived as effective	I had an input from occupational health, they got me a better desk a better chair office chair and a working graphics tablet. (Josh)	Convergence	Employees in this study have found OHS as an effective strategy.
		25% (N=3/11) on site gym was perceived effective		No fit	
		12% (N=1/11) private care was perceived effective		No fit	

Employees' approach towards the condition	Attitudes on management strategies	22% (N=6/21) effective for onsite Physio	I had some physio from the guy in our new building which has been very helpful. (Nicky)	Convergence	Employees in this study have found onsite physio to be effective.
		5% (N=1/18) perceived online OH effective	The online tool ask these questions at the end about "are you happy with this, are you happy with that, yes, yes, yes, yes", because you just want to finish it. Because this thing took an hour and you're quite busy and, you know, you sort of think about it and them probably rely on that, that you just say yes to everything. (Claire)	Divergence Expansion	Older employees did not identify online OH as an effective strategy. Participants in the qualitative phase explained how unhelpful the online assessment was. They described as time consuming process that does not capture your needs.
		35% (N=9/28) perceived flexible working as important	And I think it's particularly helping people who are going through a flare up. You might normally be well, but you might have a flare for a month up or you could be adjusting to medications or anything really. (Claire)	Convergence	Employees in this study have found flexible work to be important.
		20% (N=7/21) perceived working from home important	So, the main thing for me is that I can work from home. So, when I work from home I lie down. So, I can do that	Convergence	Employees in this study have found working from home to be important.

Employees' approach towards the condition	Attitudes on management strategies		which is wonderful, and it means I don't have to sit in my car in the rush hour so I'm not sitting in my car for longer. (Debra)		
		23% (N=7/31) perceived OHS important	I had Occupational health team come in. They assess me and then I had a chair that was good for my back and this was important for me. (Sally)	Convergence	Employees in this study have found OHS to be important.
		9% (N=2/18) perceived online OH important		No fit	
		11% (N=1/11) perceived private healthcare important	I would not say a "must have", but it is really quite nice to know that you can see somebody fairly quickly rather than have to wait and put up with it or wait for the NHS. (Andrew)	Complementarity	Private healthcare was offered in limited organisations and was only perceived important if it reduced the NHS waiting times.
		25% (N=5/21) perceived on-site physiotherapy important		No fit	
		20% (N=2/11) perceived on-site	Okay we've got a gym you know and the classes that they do for us are good but	Convergence	Employees in this study have found exercises on site to be important.

Employees' approach towards the condition	Attitudes on management strategies	exercise classes/gym important	they could they should encourage more people to use it and give the benefit of it, maybe more at a more concessional rate to encourage the use. (Laura)		
		71% (N=75/107) perceived regular breaks important	So, if it's dry I'd usually go for a walk at lunchtime because that helps me by moving around as well. (Jessica)	Convergence	Employees in this study have found regular breaks to be important.
		25% (N=27/107) reducing working hours was important		No fit	
		42% (N=44/107) found important the use ergonomic equipment	But they make such a massive difference you know that chair transformed my working life. You know I was very restrictive before. (Nicky)	Convergence	Employees in this study have found ergonomics to be important.
		20% (N=21/107) considered it important to attend exercise classes		No fit	
		22% (N=24/107) on-site professionals was important	When I had a proper workstation assessment done by a health and safety person, I think it was a nurse that came and did it and I have this new chair.	Convergence	Employees in this study have found HCPs to be important.

Employees' approach towards the condition	Attitudes on management strategies		Then somebody independent came and I got into position and she was watching me. And I think in a way it's better if somebody else is sort of standing there, looking, and saying, "ooh, well that's not right, you need a footrest, you need this, you need that". (Maria)		
		64% (N=68/107) identified medication important	So, the medication I take are very good but sometimes they have a tendency to upset my stomach. (Debra)	Convergence	Employees in this study have found medication to be important.
		30% (N=32/107) lifestyle changes were important	I need to lose more weight obviously because it will probably be less pressure on my joints, on my knees and hopefully I will be able to manage that pain better. (Annette)	Convergence	Employees in this study have found lifestyle changes to be important.
		26% (N=28/107) found important to monitor their activity levels	So, it tells me, you know, "come on you have got only done so many steps this hour get up and move". I also tend to - If, for example, I go to the toilet - to try and go to the floor	Convergence	Employees in this study have found monitoring their activity levels to be important.

Employees' approach towards the condition	Attitudes on management strategies		downstairs...and then walk back up. (Laura)		
		15% (N=16/107) found psychological approaches important	But also, in terms of emotional health and wellbeing that can be offered because I think it's very much a holistic approach. It shouldn't just be the medical model. (Sally)	Convergence	Employees in this study have found psychological approaches to be important.
		21% (N=22/107) were satisfied with the strategies offered to them	<p>I mean I am happy with the chair I got although this does not solve the issues in encounter at work. (John)</p> <p>They did give us these rucksacks to put our laptop in but that's not good because it is heavy on my shoulders and my back and is about this big (demonstrates). I feel like Dora the Explorer (laughing) and also, we have meetings in various buildings so that means walking with this weight. (Sally)</p>	<p>Convergence</p> <p>Divergence</p> <p>Expansion</p>	<p>There are areas of agreement and disagreement for the level of satisfaction.</p> <p>Strategies were found unhelpful if they could not be applied to employees' specific tasks and needs or if they were not offered due to the type of job e.g. working from home cannot be applied to all work roles.</p>

Employees' approach towards the condition	Attitudes on management strategies	37% (N=39/107) were confident that they could manage their condition well	After I had the discussion with the physio I knew how to sit properly and take regular walks so my back would not hurt "Claire" Well I wish I could work for the extra 16 years but not with my knee the way it is. I don't think I don't know. (Annette)	Convergence Divergence Expansion	There are areas of agreement and disagreement in both findings. When strategies were employed employees had increased their confidence in managing the CMSD. Whereas if participants were not offered choices, had communication issues with the management team or did not manage the CMSD themselves then did not feel confident for the future.
		48% (N=51/107) declared that they were not satisfied with the strategies offered to manage the CMSD	No because it took it a year from start to finish. I actually wrote on my health form that I need a chair with lumbar support and adjustments. You know I'm fine if I've got a chair and I don't have a problem. I've had longstanding back issues. (Nicky)	Convergence Expansion	In both phases it was obvious that not everyone was satisfied with the strategies got. In cases that strategies were offered, employees encountered bureaucracy and complex, time consuming processes.
		39% (N=41/107) could find time to self-manage the chronic condition	Depends on the day if i get the choice of what I'd do, i will break up my day and then I will try to find time for me too. (Kathryn)	Convergence Divergence	Both findings show responses of agreement and disagreement about self-management.

Employees' approach towards the condition	Take responsibility for self-management		If you are busy with your workload, and that's one of the biggest problems people have nowadays, you cannot find the time or space to self-manage and to do exercises or walk for a 20-minute break. Most days, I eat my lunch on my desk while working. There is no time to waste. (Maria)	Expansion Complementarity	Time is a difficult parameter to overcome. Not all employees have the time and the capacity to self-manage the CMSD. Those who feel that they have time to manage their CMSD have already identified strategies to change their everyday routine. However, participants in the qualitative phase explained that they do not know how to manage the CMSD efficiently. It is unclear if they are educated about active breaks and active self-management. Some of these employees explained that they work more to prove themselves and they do not have time and the energy to attend active strategies.
		94% (N=100/107) of the declared that self-managing it is very important	You need to take responsibility to self-manage. You need to make time. You make time for everything else, but you need to make time for yourself in terms of you know, go swimming	Convergence	Employees in this study showed that they know that self-management is important and necessary for their health.

Employees' approach towards the condition			or go back to yoga. (Sally)		
	Disclosing the condition	63% (N=67/107) indicated that they discussed the CMSD with their colleagues	We're a very small team. We've worked together for quite a long time, so in general the team was very supportive of any issues that any of us have. We all have the occasional aches and pains and so on and so forth so there's never been an issue. (Kathryn) I've shared that but I don't know that there's been a sort of acknowledgment if that makes sense. So, nobody sat down to discuss this with me, and I did not want to discuss it either. (Nicky)	Convergence Divergence Expansion	Both findings show responses of agreement and disagreement disclosing the condition to co-workers. Colleagues are more empathetic if the sample had discussed the CMSD not only if they disclosed the condition.
		20% (N=21/107) indicated that they discussed the CMSD with their supervisor/ line manager	I have actually spoken to my manager about it many times and just sort of said, "Do you realise that, you know, I don't often have a break you know" (Teresa)	Convergence Divergence Expansion	Not all employees in this study discussed their CMSD with their line manager or their supervisor. There is a lack of health conversations and understanding of people's conditions and needs. If there

Employees' approach towards the condition	Disclosing the condition		It not their business. I just told my line manager, that I have a condition and it affects my mobility and he can see it sometimes as I walk like I am pregnant, but I am not. (Sally)		is no understanding about CMSDs employees will not want to discuss or disclose their health issues with the management team. And neither the managers will be offered to discuss their needs.
		36% (N=38/107) felt confident to discuss their needs with their line manager	Yes, I would discuss this with my previous supervisor. He was very good and listened to our concerns. But not this one. I have told him but he is not keen on listening. (Sarah) No, in that job I decided I didn't want to actually stand out from the crowd because of my disability and my limitations in mobility really. I declare that I had back pain when I started the job but never mentioned it again. (Jack)	Convergence Divergence Expansion	Both findings demonstrate areas of agreement and disagreement. Some employees are confident to discuss the CMSD with their manager. If employees afraid about their employment and future progression they may not feel confident to discuss it.

Employees' approach towards the condition	Disclosing the condition	67% (N=71/107) disclosed the condition to their line manager	<p>When I had the erythema nodosum due to the side effects of the medication I was on, it was really quite obvious that I wasn't going to be doing anything above and beyond the work because I could hardly move at the time. (Andrew)</p> <p>I... (pause) find this again a problem with actually declaring and discussing a condition because you feel it is making you more vulnerable to being chosen for redundancy or something if you are considered less effective than somebody else. (John)</p>	<p>Convergence</p> <p>Divergence</p> <p>Expansion</p>	<p>Both findings demonstrate areas of agreement and disagreement. Some employees are confident to disclose the CMSD with their managers.</p> <p>If employees had past negative experiences, felt guilty, or did not want to be treated differently, they were less likely to request support.</p>
		60% (N=64/107) disclosed their health condition with their employer	<p>But I would feel if he was going to affect my health, I would have to declare that to my employer. I was certainly making it clear to my employer. (Andrew)</p>	Convergence	Employees in both phases expressed that they would disclose their condition with their employer if they have to do it.

	Disclosing the condition	42% (N=44/107) did not mind disclosing the condition	I'd be honest and open and... I don't know why but I suppose I feel a teeny bit ashamed which is bizarre. But we should not feel like that at all, you know, have to be honest and open and don't think that people are judging you because they're not. (Debra)	Convergence	Employees in both phases expressed the opinion that they would disclose the CMSDs to others. In the qualitative interviews, those who were reluctant to disclose explained that they would have to if it is necessary for their health.
		14% (N=15/107) did not discuss it at all	I try not to let my condition affect my role. (John) I always have to let people know that I can't sit or stand for a protracted period of time in only one position because I will set and then I can't get moving again because of the arthritis. (Jessica)	Convergence Divergence Expansion	Findings from both phases showed that not all employees in this study would disclose or discuss their health condition. Those who did not want to disclose at all their condition expressed fear of current and future employment.

		2.8% (N=3/107) indicated that they discussed the CMSD with employer	No because when my physio said I need to be on light duties until the inflammation went down but my manager was like "There is nothing to discuss more, if you are at work you need to do your job or go on sick leave". (Jack)	Divergence Expansion	Findings from both findings mainly indicated disagreement. Employees explain that they disclosed their condition but not had a second chance to discuss it further or update their manager about their health status.
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Thoughts and emotions on retirement and employment	Fear on employment	50% (N=53/107) felt worried about future employment due to their condition	It worries me because it's a progressive condition and it doesn't matter what i do. I can stay as well as I can for as long as I can but there will come a point that it will become harder for me to stay mobile and I don't know whether that's going to be when I'm 62, 72 or 82. And how am I going to work? (Jessica)	Convergence Expansion	Employees in this study expressed their worries about their current and future employment status and that was confirmed with the survey findings too. Participants in the qualitative study expressed that there is a lack of health conversations to feel confident about support and employment. They also worry about the progression of the CMSD and of other conditions they may get while they are getting older. Lastly they explained that if the management team that does not understand the CMSD they are worried about their future employment.
		29% (N=31/107) felt confident that they could work until the retirement age	I like working, and I will do it as long as I am well enough to do it and do it well, so you can still have some pride in what you are doing, I want to keep working. (Laura)	Complementarity	Employees in this study demonstrated that they would like to work longer as long as they are healthy enough to do it. Participants in the qualitative interviews expressed for different reasons for wanting to stay at

Thoughts and emotions on retirement and employment	Motivation to work longer				work (social and mental benefits, finances).
		37% (N=39/107) felt hopeless about their future	<p>I don't think I can keep going with my knee as it is. How long have been working now? It is about 30 to 35 years. (Annette)</p> <p>And I don't know what i will do if i cannot work, I'm hoping to make it till 60 and then I'll review things. But I am still helping my daughter financially and I am also looking after my mum you see. (Claire)</p>	<p>Convergence</p> <p>Divergence</p> <p>Expansion</p>	<p>There are areas of agreement and disagreement in both qualitative and quantitative phases of this study.</p> <p>Participants expressed that they feel dishearten about the future mainly because of the limitations they will encounter as they are getting older and they will have to deal with one or more CMSD. They were also desperate when they had finance issues.</p>
	Government changes and healthy retirement	47% (N=50/107) felt confident to manage their finances until retirement	<p>I will get a little bit of pension from the NHS which was frozen, and I left it so I'll get that. And that might enable me when I get to 60 to work less hours here. (Nicky)</p> <p>If I was financially okay, I think I would definitely want</p>	<p>Convergence</p> <p>Divergence</p>	<p>The findings in both phases demonstrated that employees in the study did not always feel confident that they can manage their finances. However, some of them had planned in advanced or had financial support from spouses.</p>

Thoughts and emotions on retirement and employment			to stop earlier than 67. I don't think I would want to carry on until that time. (Andrew)	Expansion	Finances are important and those who could not manage them well did not also have a plan for retirement.
		62% (N=66/107) of the respondents felt adequately informed about the pension age changes	It was all over the news and also the union had sent a few emails. (John) I was really quite dismayed to discover that. And then of course it was 65 when I originally joined it was 65 and then they've just gotten pushed it to 67 and I'm thinking all the time how I will keep going for another 12 years. (Nicky)	Convergence Divergence Complementarity	Areas of agreement and disagreement between the two phases. Not all employees in this study were informed about the pension changes. Females are more affected than males and they were unsure about further changes by the government. They mistrusted the changes as this was not the first time.
Thoughts and emotions on retirement and employment	Government changes and healthy retirement	78% (N=83/107) declared that governmental changes would impact on employees' ability to enjoy retirement	And I'm thinking: If I retired when I'm 66, what state am I going to be in? Because it's only getting worse. My heart's not as good as it was. It's not beating properly. I've got arthritis. And I've got all these different things, that's why I'm on so many tablets (Anne) But I think, you know, I was part of a generation that we	Convergence Divergence Expansion	Areas of agreement and disagreement between the two phases. Not all employees in this study thought that their retirement will be affected. Increase of retirement range is a concern for this group as they are not sure if they can be healthy to enjoy life after 68. However, those who pre-planned for early retirement

	Government changes and healthy retirement		<p>started working really quickly; we had mortgages really young; all that sort of thing. So, I feel as though what I did was planned in my mind's eye that my me-time would come in my early retirement. (Claire)</p>		<p>or for a phased retirement were confident that they will retire well.</p>
		40% (N=42/107) had a plan of how to manage their condition until retirement	<p>So, I will be taking what they call "phased retirement" which is actually the ideal thing for me. I could go down to 2 days; I can go down one more day before I actually fully retire. (Maria)</p> <p>I'm very much thinking that I need to change my job because I don't believe that sitting at a desk for the next 17 years is going to leave me in a position where I'm going to be fit to enjoy retirement at the end (Kathryn)</p>	<p>Convergence</p> <p>Divergence</p> <p>Expansion</p>	<p>Areas of agreement and disagreement between the two phases. Some employees had planned carefully their retirement and/or were ready for an early exit whereas others were not financially able or had not planned what they will do if they cannot work due to their condition.</p> <p>Those who have planned for their retirement with e.g. private pensions, investments and health insurance felt confident regardless the changes. Also, those who manage the CMSD well at the moment discussed that they are confident keep healthy until retirement.</p>

Appendix 10

Appendix 10.1 Draft leaflets with recommendations (employees)

References

Office for National Statistics (2019) *Overview of the UK Population* [online] available from <<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/articles/overviewoftheukpopulation/january2021>>



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Additional reading


- ◊ [A practical guide to self-management support](#)
- ◊ [Tame the Beast](#)
- ◊ [Escape Pain](#)
- ◊ [Exercise advice leaflets- Versus Arthritis and the Chartered Society of Physiotherapy](#)
- ◊ [Mindfulness](#)

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Guidance for employees who manage a chronic musculoskeletal disorder in the workplace



This brochure provides practical guidance and recommendations for employees with chronic musculoskeletal disorders (CMSDs) which are based on results of a PhD study conducted at Coventry University (Skamagki 2021).

The recommendations and example strategies provided in this brochure are general in nature and are intended to stimulate ideas that could apply in individual situations.

The brochure content is applicable during the COVID-19 pandemic and beyond.



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Why is musculoskeletal health important at work?

Chronic musculoskeletal disorders include a range of conditions affecting e.g. the muscles, tendons, ligaments, joints, and last more than 12 weeks.

They are commonly associated with a need to take sick leave and a reduction of productivity at work. Therefore, in the workplace context, musculoskeletal health may present a challenge for employees that also affect how they feel about their work ability and long-term employability.

Many of you will know the extent of the problem; musculoskeletal disorders (including chronic and work-related) are one of the major health issues at Europe's workplaces, as for example, 7.8 million days (19.7%) were lost in 2019 due to musculoskeletal conditions (The Office of National Statistics, 2019).

The prevalence of MSK conditions (including CMSDs) remains high in those over the age of 50 regardless of the type of complaint (Wilkie, Tajar, and McBeth 2013). As we all get older these statistics are likely to increase.



What you can do?

When it comes to taking care of your musculoskeletal health at work, having a plan is a great first step.

The following recommendations and examples have been chosen to help you find what works for you and have been designed to fit into your working routine.

This is not an exhaustive list but it includes the main findings from our study.

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Staying at work healthy is easier
than you might think!

Useful tips and strategies

- ⇒ Have an open discussion with your manager about your health. It is important that you feel able to fully disclose information about your experience with a musculoskeletal condition in order that the individual (manager or employer), who is responsible for health and safety and employee welfare at work, can respond and make a plan with you appropriately.
- ⇒ Ask for individualised support if you think that your musculoskeletal health negatively affects how you feel about work or negatively affects how you work. For example, explore the possibility of flexible working arrangements with your manager when you have a flare up of your musculoskeletal condition or are not feeling well. You can also ask for support and guidance if your job requires moving and handling tasks.
- ⇒ Take the responsibility of becoming familiar with the relevant workplace and leave policies, and any governmental work initiatives and schemes that might be available to support you at work. A collegial relationship with your manager will help you to find this sort of information or you could contact your Union representative or the human resources service (if available).
- ⇒ Don't be afraid to discuss your musculoskeletal condition with your manager or colleagues. It is common for others to not understand what living with this type of condition is like and an explanation about e.g. your symptoms, or flare-ups and their impact of your work may help them be more empathetic and supportive.
- ⇒ It will help you to reach your health goals if you engage in conversations, join a group, and meet others with similar issues. The support of your colleagues or a 'buddy' may provide social and /or emotional support and practical assistance. Find out if there are any support groups at work!
- ⇒ If you feel unwell avoid staying at work. Discuss the possibility of working from home with your manager and / or ask to be seen by a healthcare professional for workplace assessment. You may need workplace adjustments, e.g. a standing desk, frequent active breaks, especially if you work in an organisation with strict absence policies that does not support frequent sick leave.
- ⇒ Be proactive and try to self-manage your condition at work. Research has highlighted that a self-management plan that includes exercise and access to healthcare services has been shown to be useful in managing a musculoskeletal condition at both work in a person's personal life. Scheduling time, which is preferably endorsed by the organisation, with occupational health services at work or a healthcare professional, such as a physiotherapist, is a tangible way of obtaining the support and information needed to implement individualized self-management strategies at work. If occupational health services are not available at work you may ask your healthcare professional to prescribe you some exercises that you can do.
- ⇒ Research has also highlighted some strategies that people found effective. If your job involves a lot of standing or sitting, regular active breaks can help reduce your musculoskeletal symptoms. You may find it useful to change your working position regularly and carry out routine exercises. You could also learn some relaxation skills for unwinding the body and the mind e.g. meditation, mindfulness or yoga.

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Appendix 10.2 Draft leaflets with recommendations (managers and employers)

References

Office for National Statistics (2019) Overview of the UK Population [online] available from <<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/articles/overviewoftheukpopulation/january2021>>

Skamagki, G. (2021) Management of Chronic Musculoskeletal Disorders in the Workplace from the Perspective of Older Employees: A Mixed Methods Research Study. Coventry University

CIPD (2020) Health and Wellbeing at Work [online] available from <https://www.cipd.co.uk/Images/health-and-well-being-2020-report_tcm16-73967.pdf>

Additional reading

- ◇ [A practical guide to self-management support](#)
- ◇ [Tame the Beast](#)
- ◇ [Escape Pain](#)
- ◇ [Exercise advice leaflets- Versus Arthritis and the Chartered Society of Physiotherapy](#)
- ◇ [Mindfulness](#)

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Guidance for managers and employers working with employees who have a chronic



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This brochure provides practical guidance and recommendations for employers and managers to better support employees in their efforts to manage a chronic musculoskeletal disorder at work.

These recommendations are based on the results of a PhD study conducted at Coventry University (Skamagki 2021). The recommendations and example strategies provided in this brochure are general in nature and are intended to stimulate ideas that could apply in individual situations.

The brochure content is applicable during the COVID-19 pandemic and beyond.



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Why is musculoskeletal health important at work?

Employees, employers and managers are often concerned about musculoskeletal disorders* due to the impact of CMSDs on employees' ability to work. Many of you will have experience of these issues, as musculoskeletal disorders (including chronic and work-related) are one of the major health issues at Europe's workplaces. For example, 7.8 million days (19,7%) were lost in 2019 due to musculoskeletal conditions (The Office of National Statistics, 2019).

However, factors such as demographic changes, the need for economic restructuring, and the necessity of working longer have presented challenges for both employers and employees. In the workplace context, musculoskeletal disorders (MSDs) can be associated with sick leave rates, presenteeism and reduced productivity levels. For example, a large survey study involving over 1000 organisations (across all sectors and organisation sizes) estimated that 89% of organisations had observed presenteeism in the last year (Chartered Institute of Personnel and Development 2020). These statistics are expected to increase in the future as the population ages. The need for action is recognised by the UK government and the involvement of the employer and manager is crucial.

*Chronic suggests lasting more than 12 weeks the practice of coming to work when feeling unwell



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What you can do?

Employers and managers are encouraged to create a sustainable work environment that adopts a holistic approach taking into consideration employees' personal, health and work-related factors while also taking into account the political context e.g., government policies on retirement, health and employment.

The purpose of these recommendations and examples is to assist you to support employees who have CMSDs in a way that works best for them and the organisation. This is not an exhaustive list but it represents the main study results.

Staying at work healthy is easier
than you might think!

Useful tips and strategies

- ⇒ Foster an empathetic and supportive working culture that encourages employees to effectively manage a musculoskeletal condition in the workplace. Developing a collegial relationship with individual employees will assist you to identify and inform them about essential and relevant information, for example, workplace policies and governmental work initiatives and schemes, that might be useful to them. Through these conversations you may encourage healthy behaviours, for example, invite them to participate in regular active breaks, create walking groups, and carry out routine exercises in a working day.
- ⇒ Good communication between employees, employers or managers is crucial and needs to be encouraged within the organisation. It is particularly important to engage in conversations about employees' health and to encourage disclosure and identify how they are supported by organisational policies. Managers can engage in health conversations, for example, use performance reviews as opportunities for feedback and learning instead of evaluation against strict targets.

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- ⇒ Provide employees with CMSDs individualised support and develop straightforward processes by which they can easily access relevant support at work. Implementing an individualised program in an organisation is an ongoing, long-term, multi-level and flexible strategy. It requires that employers and managers take a proactive approach to supporting employees with a CMSD and the creation of collaborative and realistic goals. An individualised program allows time for reflection and encourages employee participation and communication.
- ⇒ Research highlights that access to healthcare is useful in assisting employees with a CMSD both at work and in their personal life. Onsite or private Occupational Health Services (OHS) have the potential to support managers' role in providing quick healthcare access to employees with a CMSD. Healthcare professionals working in OHS can also promote early health conversations and clear communication between various members of an organisation.

- ⇒ It is recommended that you regularly review all workplace policies, governmental initiatives and schemes that can be used for employees' benefit. Signpost employees to sources of information such as online workplace website, enrolment packages, or wall posters. Organisational leave policies and attendance management policies need to be flexible in order to meet the specific needs of subgroups, such as women over the age of 50 and older employees with more than one CMSD.
- ⇒ It may be useful to establish separate policies that cover absence associated with chronic conditions or disability and absence resulting from ill-health or sickness. Such policies could help achieve a balance between managing absence efficiently and providing support and help to employees with musculoskeletal disorders.

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Facilitate the creation of supportive groups in the workplace for all employees but particularly those managing musculoskeletal disorders. Managers can support regular health meetings, workplace health events, or wellbeing days.

Employees can invite relevant health and lifestyle speakers from registered health associations (e.g. Chartered Society of Physiotherapy) or other health charities.

In that way, employees could participate in such events and ask questions about their health, explore other self-management strategies, and network with others in the organisation.

It is recommended that employers invest in educational initiatives that promote empathy and facilitate stronger relationships between the manager and employees.

Developmental opportunities could include courses, such as, developing emotional intelligence, effective communication skills or working in teams and explain their influence in creating a healthy working environment.

These courses are important as they could decrease the tendency to stereotype and judge behaviours, and build the necessary skills to have productive conversations about musculoskeletal and mental health at work.

⇒ Acknowledge the role of colleagues' in acting as a link between employees with MSDs and the management team, for example, using a 'buddy system' or a 'wellbeing champion'.

⇒ Co-workers can also provide general assistance to those employees who would welcome assistance, for example, in performing difficult physical work tasks e.g. lifting, or by accepting alternative working arrangements that would support employees with MSDs.

⇒ Managers could also appoint a champion for wellbeing and musculoskeletal health to encourage employees with MSDs to participate in work exercise programmes such as outdoor activities and staff team sports.



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