



The  
University  
Of  
Sheffield.

**Perceptions of Cognitive Behavioural Therapy in  
Physiotherapy for Chronic Low Back Pain: An  
Explanatory Grounded Theory**

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## DEDICATION

This thesis is dedicated to my parents who have always had faith in me and provided the inspiration for this higher educational achievement.

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*“Whoever is not thankful to the people, then he is not thankful to Allah (God)”* (Prophet Mohammed)

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## ABSTRACT

Chronic Low Back Pain (CLBP) is one of the most common and recurrent musculoskeletal problems to cause patients to access healthcare services. The bio-psychosocial model emphasises that psychological, behavioural and social factors contribute to the development and persistence of CLBP. Cognitive behavioural therapy (CBT) is one psychological pain management strategy that can be applied in the context of physiotherapy treatment for CLBP. It aims not only to reduce pain but also to address the cognitive and behavioural aspects of the pain and quality of life.

The proposed study was preceded by a mixed methods systematic review that found that CBT has a beneficial effect for CLBP patients when compared to waiting list or other treatments. CBT is an emerging area of interest in physiotherapy and there is a need to understand how best to apply it in clinical practice. An in-depth qualitative study is needed to explore the use of CBT in the physiotherapy management of CLBP to improve understanding of possible reasons for variation in its effectiveness.

The study used a qualitative approach applying methods and analysis from constructivist grounded theory. Data were collected from CLBP patients, physiotherapists and managers of physiotherapy services in the community musculoskeletal based services commissioned to provide outpatient physiotherapy services to patients in Yorkshire, between May 2016 and March 2017. Data were collected from 26 participants (11 patients, 13 physiotherapists, and 2 managers) through 28 interviews.

The study findings provided a first explanatory theory that helped in explaining and understanding how, when and why some physiotherapists make a decision to apply CBT for CLBP patients, whereas others do not. Findings suggested that physiotherapists' decision making to use CBT for CLBP was influenced by many factors including, training in CBT, professional experience as a physiotherapist and after delivering CBT, knowledge and skills, confidence as well as patients' characteristics, and observed positive outcomes of treatment. The findings of this study improve the understanding of possible reasons

contributing to the variation in the effectiveness of CBT applied in the physiotherapy context for CLBP that have been recognised across different studies and populations. This has implications for education and may inform practice and research related to the use of CBT for CLBP in physiotherapy.

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# **CHAPTER 1: INTRODUCTION TO THE THESIS**

## **1.1 Introduction**

The purpose of this study was to generate an explanatory theory that provides an explanation and understanding of how, when and why some physiotherapists make the decision to apply cognitive behavioural therapy (CBT) for chronic low back pain (CLBP) patients, whereas others do not. This chapter provides an overview of the thesis rationale. It describes the researcher's personal and professional background and motivation. Then it presents a reflection upon the research process and insights gained from the research. The thesis structure is summarised at the end of this chapter.

## **1.2 Researcher's Personal and Professional Background and Motivation**

Before starting my PhD at the University of Sheffield, I was working as a clinical physiotherapist in Kuwait. I joined an orthopaedic specialist hospital in 2008 immediately after I was awarded my bachelor's degree in Physiotherapy. I did not stop my learning at the point of graduation but during my work I continue to improve my skills and widen my knowledge through different training seminars and workshops in Kuwait and abroad. I am skilled in the management of a broad range of conditions that affect the musculoskeletal (MSK) system. In the first years of my employment, I was really keen to continue my higher education to improve my career prospects, widen my skills and to enhance the competent and high performing physiotherapy workplace through: research utilisation, evidence-based practice and quality improvement. After two years of work, I got a scholarship from Kuwait Ministry of Health to continue my postgraduate study. I was awarded my

MSc degree in applying physiotherapy-musculoskeletal from Sheffield Hallam University, 2012. My Masters course introduced me to the world of research within the field of physiotherapy as I conducted a quantitative survey of Kuwaiti physiotherapists (Alenezi and May 2015). Then, I joined Kuwait University as a staff member, immediately earning a scholarship to continue my research development by studying for a PhD. During my master's study, I had learned about different research methods, but I only conducted research using quantitative research methods. I published my master's dissertation, which was quantitative survey of Kuwaiti physiotherapists about the use of evidence-based interventions in Kuwait. Up to the time when I started my PhD, I had not used other research methods than quantitative ones. I therefore started my PhD with the goal of learning about other research methods in greater detail and using them, as appropriate, in my own research. On completion of my thesis, I will be learned how to conduct a mixed method systematic review and qualitative research using a grounded theory approach, both of which were new experiences for me. Using these in-depth research approaches has helped to enhance my research skills and experience.

***How and why did I develop a research interest in CBT for CLBP?***

As a clinical physiotherapist, I treated a lot of patients with chronic MSK conditions who presented with low mood, poor self-efficacy and confidence. One of these conditions was chronic low back pain (CLBP), which is considered one of the most common and recurrent musculoskeletal problems that contributes to the high usage of health care services (Miller *et al.*, 2005; Moore, 2010). It also affects people of different ages and regardless of their gender, social status and

educational background. CLBP therefore has an impact on both the individual and society as it leads to huge financial costs.

When I treated those types of patients, I found myself able to change their mind-set and motivate them through dialogue. I recognised through discussion and education, I helped to improve patient's self-efficacy over time, improving them positively and encouraging them to be more confident in coping with and controlling their pain. I realised this dialogue was an important part of the treatments that I offered to patients with chronic MSK pain and I personally referred to this as "talk therapy". I was therefore interested to read articles about such cognitive strategies that help CLBP patients to self-manage their pain and support them to cope with pain positively.

As part of this I read about the use cognitive behavioural therapy (CBT) in supporting management of CLBP. CBT is one of the psychological treatments that targets the cognitive and behavioural aspects of the pain experience in order to improve psychological wellbeing, physical activity, generic functional status and quality of life. Then, I attended a two-day course titled "Introduction to the cognitive-behavioural approach to physical therapy in the management of pain" offered by the Physiotherapy Pain Association (PPA) at the University of Huddersfield. From this course I learned the definition and aims of CBT in treating patients with chronic pain, and also developed an interest in understanding the effectiveness of CBT and how it is applied in context of physiotherapy for patients with CLBP. This PhD thesis therefore aimed to generate an explanatory theory that provides an explanation and understanding of how, when and why some physiotherapists make a decision to apply CBT for CLBP patients, whereas others do not.

### **1.3. Reflection Upon the Research Process and Insights Learnt from this Research**

This thesis has provided me with the chance to conduct qualitative research for the first time and provided a learning opportunity that has supported my development in both personal and professional respects. Although it has been a challenging experience, it was interesting and worthwhile. Now, as a physiotherapist, I have an exhaustive understanding of how, when and why I should use CBT for patients, not only with CLBP, but with a wide range of chronic musculoskeletal conditions. In addition, I am aware now about the challenges of using CBT in physiotherapy. This will help me in my next position I have in the physiotherapy department in the Kuwait University targeted at improving the initial training of future physiotherapists by increasing the emphasis on the biopsychosocial model and role of psychological interventions such as CBT approach in clinical practice. This will subsequently enhance the health care of patients. As a researcher, this PhD has provided me with a comprehensive learning experience of how to conduct research, starting from writing a proposal to analysing my data and discussing my findings. I cannot claim that I am now a perfect researcher; however, I have become a novice researcher who can practise research independently in future with more confidence. With the purpose of learning more about chronic pain management within physiotherapy services in the UK and in order to gain research training, this research was conducted in the UK. This introduced me to researchers working in this field. It built a bridge of knowledge through future networking and collaborations between UK and Kuwait in research related to the CBT approach in physiotherapy. Personally, I learned a lot from the explanation of the CBT techniques provided by physiotherapists and the ways they used them with patients. For me, it was the first time to hear

about some CBT techniques in detail, together with real examples. For instance, physiotherapists talked about patient characteristics that point them towards using CBT, with one of these being putting high expectations on themselves and then not achieving what they hoped to do. Reflecting upon my personal life, this definitely was one of the challenges that I faced in my PhD. This might be due to unrealistic planning, which sometimes led me to feel a failure when I did not achieve my goals, and shame because I was not able to meet deadlines, and since my supervisors had already set a time in their schedule to review my work I did not benefit from that. As a solution, I used the strategies and advice that physiotherapists used to treat such patients with this issue, in an effort to improve my mental health to avoid reaching a stage of distress that could affect my PhD. I learned how to set myself small achievable tasks then reward myself when I achieved them, stop blaming myself for things that had already gone, and take care of myself. Besides this, I can highlight the support of my supervisory team and my personal tutor when I faced these problems and how they guided me to ease things. In addition, as the way in life, I faced many personal problems and illness during my PhD. These problems affected my progress leading me to stop my study many times. Learning from my data about CBT techniques helped me a lot to overcome the depression and stress I had because of these problems.

#### **1.4. The Structure of the Thesis**

This PhD thesis is organised into six chapters, including: introduction to the thesis, background of the study, mixed methods systematic review, methodology, findings, and discussion of findings and conclusion. These chapters, and a brief explanation of their contents, are described in Table 1.

**Table 1: Contents of the thesis' chapters**

| <b>Chapters of Thesis</b>  | <b>Contents of Chapter</b>   |
|--|--|
| <p><b>Chapter 1</b><br/><b>Introduction to the thesis</b></p>      | <p>This chapter presents the researcher's personal and professional background and motivation. It presents the researcher's reflection upon the research and insights gained from this research. Finally, it describes the structure of the thesis.</p>  |
| <p><b>Chapter 2</b><br/><b>Background to the study</b></p>         | <p>This is the background chapter in which the literature on CLBP and CBT are reviewed. The definition, causes, risk factors and burden of CLBP are presented. CLBP management theories and models are described and current varieties of CLBP treatments are overviewed. The definition and components of CBT are discussed. At the end of this chapter, the research aim, questions, and objectives are presented.</p>   |
| <p><b>Chapter 3</b><br/><b>Mixed methods systematic review</b></p> | <p>This presents the first study in this PhD, which is a mixed methods systematic review that aims to identify the available evidence for the effectiveness of CBT in the context of physiotherapy for CLBP, and the possible existing reasons for the variation in the effectiveness of this technique. This study aims also to identify the current gaps in knowledge about CBT. The findings of this review are used to design the primary study of this PhD, which is a qualitative study.</p> |

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| <b>Chapter 4</b><br><b>Methodology and Methods</b> | This chapter describes in detail the research methodology and the methods of the qualitative approach that are used to conduct the primary study (Study 2 of this PhD). This chapter explains the philosophical background for this study. The rationale of using the qualitative approach is described, specifically a constructivist grounded theory methodology. This chapter also provides a description of the study settings, data collection methods, data collection process, data analysis methods and the process used in the study, alongside a reflective account. |
| <b>Chapter 5</b><br><b>Findings</b>                | This chapter presents the findings of this study, which are supported using quotations from participants' interviews. It starts with a description of the participants' demographic characteristics. Then, it ends with an explanation of the developed grounded theory.   |
| <b>Chapter 6</b><br><b>Discussion</b>              | The final chapter discusses the findings in relation to the literature review and sets out the limitations and strengths of this thesis, and possible implications for research, practice and education. It also presents the work's contribution to knowledge and conclusions.  |

**1.5 Conclusions**

This chapter has discussed my professional and personal backgrounds and perspectives in order to be transparent about how they have influenced my studies and provided a rationale for conducting this study. It has been suggested that a researcher's biography influences their methodological decisions (Charmaz, 1990), and therefore to enhance the rigour and quality of findings it is

necessary to clarify how prior knowledge may impact the research process (Cutcliffe, 2000). Nevertheless, it was also important to ensure that my personal experiences and views did not impede the process of attaining rich data from the participants (Charmaz, 2009), making it essential to manage any preconceived ideas. This has been managed throughout the data collection and analysis process by distinctly documenting reactions from the actual data and inspecting my research decisions throughout the research project.

The following chapter provides a background to the study by reviewing the literature on CLBP and CBT. The definition, causes, risk factors and burden of CLBP is presented. CLBP management theories and models are described and current varieties of CLBP treatments are surveyed. The definition and components of CBT are also discussed. At the end of this chapter, the research aim, questions and objectives are presented.



## **CHAPTER 2: BACKGROUND TO THE STUDY**

### **2.1. Introduction**

The second chapter of this thesis starts by defining the concept of pain and highlighting components of the pain experience. Based on the literature on pain research, the chapter also provides an explanation of the basic physiology of pain and its modulating mechanisms. Then, the chapter introduces the problem of chronic low back pain (CLBP) and explains the differentiation between acute and chronic pain. In order to understand the concept of pain there follows an overview of the psychology of pain and a discussion of the common psychological factors that contribute to the development and maintenance of CLBP.

Next, the chapter presents a number of theories and models relevant to the management of low back pain, leading to an overview of the treatment for chronic low back pain: firstly, a summary of the current varieties of CLBP treatments; secondly, cognitive behavioural therapy (CBT) as one of the psychological pain management treatments. This is followed by the research questions and a clear statement of the research aim and objectives.

### **2.2. Definition of Pain**

Pain is considered to be a highly subjective and individualised experience (Melzack & Wall, 1965; Lipton, 1991). The International Association for the Study of Pain (IASP) defines pain as ‘an unpleasant sensory and emotional experience associated with actual or potential tissue damage or

described in terms of such damage' (Lipton, 1991). This clarifies that the experience of pain is complicated and consists of more than one component (Melzak & Wall, 1965). Such components are the sensory component (the immediate unpleasantness of pain) and the affective component (fear, anxiety, fear-avoidance behaviour), which contribute to the development of the long-term effect of pain experience (Calvino & Grilo, 2006; Price et al., 2006). Cognitions (e.g., memory, expectation and beliefs) are associated with the affective component: for example, patients may feel anxious when they remember their pain, or when they have beliefs that they cannot cope with pain or that their pain will affect their well-being in future (Damasio, 2000). Nonetheless, pain is considered to be a healthy, normal process involving multiple body system responses that aim at protecting the body from damage (Latremoliere & Woolf, 2009).

### **2.3. What is the Difference between Acute and Chronic Pain?**

Acute pain is defined as pain that is generated when peripheral nociceptors are stimulated by a noxious stimulus (e.g., thermal, chemical, mechanical or electrical stimuli). The recovery from acute pain is known to occur within a few weeks, in tandem with the healing of the associated injury (Moseley, 2003). In contrast—and according to the International Association for the Study of Pain (IASP)—chronic pain is defined as ‘pain that persists past the healing phase following an injury’ (Merskey & Bogduk, 1994).

Chronic pain lasts more than three months, leading to a number of consequences that affect one’s quality of life (Apkarian et al., 2009; Wand et al., 2011). It may develop due to physical pathology, which involves structural damage, but since it is a complex condition with physical, psychological,

emotional and social components (Waddell & Burton, 2005), it may also occur in the absence of definitive pathology (Waddell, 1987; McCracken & Samuel, 2007). For example, pain catastrophising, which is one of the psychological factors linked to chronic pain (see section 2.5.3), is associated in particular with disability and enhanced pain behaviours, as well as with hypervigilance. Patients who catastrophise have been shown to have significantly higher cortical activation of the somatosensory cortex, anterior cingulate cortex and lentiform nuclei (Institute for Chronic Pain. Chronic Pain Syndrome accessed 10.12.2019). This strongly suggests that catastrophising is associated with the development and persistence of chronic pain and is a modifiable behaviour rather than a fixed neuronal problem (Keefe et al., 2004). Also, failure of previous treatment, and how this contributes to the development of chronic pain has been explained by Waddell (1987, p. 636), who states that “failed treatment may both reinforce and aggravate pain, distress and illness behaviour”. This means that choosing an appropriate treatment is fundamental in the early stages to avoid the development and persistence of chronic pain (Hope, 2002).

#### **2.4. The Problem of Chronic Low Back Pain (CLBP)**

Chronic Low Back Pain (CLBP) is one of the most common and recurrent musculoskeletal problems leading patients to access healthcare services (Miller *et al.*, 2005; Moore, 2010). The majority of people have at least one episode of Low Back Pain (LBP) at some point in their lives (Hoy *et al.*, 2010), meaning that LBP is considered to be a major public health problem, not only in Western industrialised countries (Lamb *et al.*, 2010) but also in various other countries across the globe (Hoy *et al.*, 2010; Balague *et al.*, 2012).

The following sub-sections will present the definition, causes, epidemiological parameters, impacts and prognostic risk factors of CLBP.

#### **2.4.1. Definition by Topography**

Low Back Pain (LBP) is topographically defined by Dionne *et al.* (2008) as stated in Hoy (2010, p.775) “pain between the inferior margin of the 12 rib and inferior gluteal folds that is bad enough to limit usual activities or change the daily routine for more than one day”. It can be accompanied by pain radiation to the leg (Dionne *et al.*, 2008; Hoy *et al.*, 2010). In most cases, LBP cannot be attributed to a specific cause; hence, it is commonly referred to as non-specific Chronic Low Back Pain (CLBP). Approximately 85% of patients who suffer from LBP are diagnosed with non-specific LBP (van Geen *et al.*, 2007). Low Back Pain is recognised as chronic when it persists for a duration of more than three months (Apkarian *et al.*, 2009; Wand *et al.*, 2011).

#### **2.4.2. Causes**

In an effort to understand a problem such as CLBP, it is fundamental to establish the causes; however, these remain confusing and unclear (Geisser, 2007). The injuries, physical dysfunction and alterations in the central nervous system are discussed here to clarify the aetiology of CLBP.

In terms of physical injuries and dysfunction, it is not always possible to identify the physical causes of low back pain by means of standard medical diagnostic investigations (e.g., MRI, CT-scan, X-ray), Studies have shown that there is not a strong association between the presence (or absence) of abnormalities in X-ray and magnetic resonance imaging (MRI) and the occurrence of

low back pain (Chou and Shekelle-Jama, 2010; Deyo *et al.*, 2015). A similar prevalence of abnormalities is apparent when imaging people without back pain as in those with back pain. Indeed, it has been reported that radiological abnormalities occur in between 40% to 50% of people without low back pain (Chou, Shekelle-Jama, 2010; Deyo *et al.*, 2015). Similarly, many people with low back pain show no abnormalities (Balague *et al.*, 2012; Maher, Underwood and Buchbinder, 2017). There is also no direct linear relationship between the amount of detectable physical pathology and the reported pain intensity (Turk and Melzack, 2011; Dansie and Turk, 2013). As a result, the patient's history and physical examination remain the bases of medical diagnosis, serving to provide a safeguard against over-interpreting findings from diagnostic imaging, which is relegated to a largely confirmatory role, and to guide the direction of further evaluation efforts (Dansie and Turk, 2013).

In terms of alterations to the central nervous system, when there is no source of physical injury or dysfunction in patients with chronic pain, aetiological mechanisms, such as central sensitisation, are hypothesised to be a possible reason behind prolonged pain. Central sensitisation occurs when the central nervous system (CNS) becomes hypersensitive and reorganised due to the long duration of musculoskeletal or neuropathic pain (Coderre *et al.*, 1993; Geisser *et al.*, 2007a). Although pain is an output of the CNS, in chronic pain this output, which follows a descending modulation, is altered due to neoplastic changes (Melzack *et al.*, 2001a, 2004).

Many areas of the brain are activated during the pain experience. This is explained by the neuro-matrix theory, which emphasises that pain is a product of both sensory sensation and complex changes in the neural network that draws on previous experience to influence future experience.

(Melzack *et al.*, 2001a, 2004). Thus, the brain of a patient who once suffered from pain due to an injury has reorganized to expect painful sensations in that area. As a result, it could be suggested that feeling pain results from a combination of actual sensory experience and the aftereffects of changes in the neural matrix.

Essentially, CLBP may present difficulties in establishing a particular injury as being responsible for causing the painful symptoms experienced by a patient due to a combination of the phenomenon of central sensitisation and the lack of specificity and sensitivity in diagnostic imaging. Thus, the causes of CLBP have been found to be multifactorial; these factors will be discussed in this chapter (Rasmussen *et al.*, 2016).

### **2.4.3. Epidemiological Parameters**

The incidence, prevalence, remission and duration of LBP are the epidemiological parameters that will be described in this section.

A systematic review determined the incidence of LBP in different countries worldwide (Hoy *et al.*, 2010). The incidence rates, based on a first-ever instance of LBP over a one-year period, ranged from 6.3% through to 15.4% in studies carried out across Canada, Denmark and the UK, but spanned 1.5% to 36% in those studies carried out in an Israeli or Kuwaiti context (Hoy *et al.*, 2010).

It is difficult to estimate the prevalence of LBP accurately owing to the fact that symptoms are inconsistent, often fluctuating, and recur over time (Hoy *et al.*, 2012). In spite of this, the prevalence of CLBP is recognised as high in different countries (Dionne *et al.*, 2008; Hoy *et al.*,

2010). Importantly, various scholars have highlighted that LBP affects four out of every five people at least once during their lifetime (Koes *et al.*, 2006; van Tulder & Koes, 2006; Freburger *et al.*, 2009), with an estimated one-third of the UK population affected every year, one in five of whom seek medical advice (Macfarlane *et al.*, 2006). A sound systematic review relating to LBP prevalence, which included moderate quality studies carried out in a number of different contexts, emphasised that the means of one-month prevalence (30.8%) and one-year prevalence (38%) were both greater when compared with the mean of the point prevalence (18.3%) (Hoy *et al.*, 2012). If one considers prevalence in relation to countries' economic status, the mean prevalence in high-income countries (32.9%) was found to be greater than estimates from middle-income (25.4%) and low-income countries (16.7%) (Hoy *et al.*, 2012).

Predicting the remission time, taking into account onset and the remission through to follow-up points, is not simple and is affected by the nature of the symptoms of LBP (Hoy *et al.*, 2010). Notably, in two different studies, one carried out in Denmark (Schlottz-Christensen *et al.*, 1999) and the other in the Netherlands (Van den Hoogen *et al.*, 1997), measurement was based upon complete recovery; in other words, for remission to be said to have occurred, no LBP symptoms were to be recognised for the last four weeks at follow-up (Van den Hoogen *et al.*, 1997; Schlottz-Christensen *et al.*, 1999; Hoy *et al.*, 2010). In these two particular studies, the remission estimates at one-year were 54% and 90% for Denmark and the Netherlands, respectively (Van den Hoogen *et al.*, 1997; Schlottz-Christensen *et al.*, 1999; Hoy *et al.*, 2010). Confidence in these results might be reduced, however, due to the fact that neither study detailed the episode in which remission was measured.

The duration of LBP has been predicted in a number of clinic-based studies (Hoy *et al.*, 2010). It has been identified that, at one-year follow-up, median pain days amounted to 128.5 days amongst those patients suffering with CLBP (Von Korff *et al.*, 1993).

In sum, these epidemiological parameters, along with their figures, go some way to explaining why CLBP is recognised as a common public health problem that accounts for a significant economic burden (Balague *et al.*, 2012). It is therefore necessary to provide an overview of the impacts of CLBP on health services and people.

#### **2.4.4 What Are the Impacts of CLBP?**

CLBP is considered to be a serious and costly health problem as it leads to substantial disability, work absenteeism and huge medical expenses (Langenvin & Sherman, 2007). In the UK, for example, it has been stated that LBP has caused the loss of 90 million work days on a yearly basis, with 12 million GP visits annually, as highlighted by Dunn & Croft (2004) and Froud *et al.* (2014). This means that LBP is the second most prominent cause for GP visits and seeking medical advice in the UK, second only to the flu virus (Miller *et al.* (2005). In the American context, it has been predicted that LBP is responsible for the loss of an estimated 149 million work days on an annual basis (Freburger *et al.*, 2009). With these figures in mind, it is clear to see that CLBP creates a notable financial burden for the national health service within the UK (Maniadakis & Gray 2000), as well as significant personal and socioeconomic effects for those suffering with such a problem (Parsons *et al.*, 2007). In this vein, it is known that CLBP is responsible for 12.5% of all work absences, which, in 2000, cost the UK economy more than GBP11 billion (Maniadakis & Gray,



2000; Apkarian & Baliki, 2009). Moreover, also in the UK context, in 2004, 8.6% of CLBP sufferers lost their jobs as a direct result of their disability, as recognised by Patel *et al.* (2007). The total costs incurred as a result of CLBP can be broken down as follows: physiotherapy 17%, primary care 13%, pharmacological treatments 13%, in-patient care 17% (Dagenais *et al.*, 2008). CLBP costs in the USA are estimated to total between US\$100 billion and US\$200 billion annually, with as much as 66% arising from decreased productivity (Freburger *et al.*, 2009). Strikingly, the majority of those who experience LBP that subsequently limits their physical activity go on to experience more episodes (Hoy *et al.*, 2010). Recurrence estimations at the one-year follow-up range from 24% through to 80% (Leboeuf-Yde *et al.*, 2005; Côté *et al.*, 2008; Stanton *et al.*, 2008; Hoy *et al.*, 2010). Furthermore, LBP recurrence disproportionately contributes to the burden from non-specific work-related LBP (Wasiak *et al.*, 2006; Hoy *et al.*, 2010). Wasiak (2006) details that work disability is regarded as lengthy amongst those people who have suffered recurrences when contrasted alongside those who did not (Wasiak *et al.*, 2006; Hoy *et al.*, 2010). Froud *et al.* (2014) carried out a systematic review centred on qualitative studies with the objective of synthesising the impacts of LBP on individuals' lives. This showed that activities, work and relationships are all affected by CLBP (Froud *et al.*, 2014). Specifically with regard to activities, CLBP-induced function loss undermined the ability of people to complete normal, everyday activities such as walking or lifting. There were also a number of problems experienced in regard to rest and sleep (Reid *et al.*, 2004; De Souza & Frank, 2007; Froud *et al.*, 2014). In terms of work, as mentioned above, losing a job is recognised as of the main consequences of CLBP. Importantly, being unemployed subsequently results in financial worries (the inability to meet bill payments and therapy costs, for example) and feelings of being insecure (Allegretti *et al.*, 2010; Coole *et al.*,

2010; Young *et al.*, 2011; Froud *et al.*, 2014). Social relationships were also found to be affected by CLBP, leading to social withdrawal and feelings of isolation. CLBP-suffering individuals are also known actively to avoid involving themselves in gatherings of friends and family due to concerns about other people's views, and the fear of experiencing pain when in such environments (Osborn & Smith, 1998; Froud *et al.*, 2014).

#### **2.4.5. Risk Factors and Prognosis in CLBP**

Due to the high burden related to chronic low back pain (CLBP) (Vos *et al.*, 2015; Alamam *et al.*, 2019), explaining prognostic factors is essential for identifying people at risk of developing CLBP and for identifying the likelihood of future recovery. This section will start about LBP at first but then it will move on to discuss the transition from LBP to CLBP. There are a number of environmental and personal risk factors that influence the onset and course of LBP and the likelihood that it will develop CLBP (Hoy *et al.*, 2010). These include age, educational status, psychosocial factors, psychosocial workplace factors and occupational factors. Some studies have found incidence of LBP is highest in the third decade (Hoy *et al.*, 2012), and overall prevalence increases with age until ages 60 or 65 years, and then gradually declines (Hoy *et al.*, 2012). Low educational status has been shown to be associated with an increased prevalence of low back pain (Dionne *et al.*, 2001, Hoy *et al.*, 2010).

There are a number of psychosocial factors associated with low back pain, including stress, anxiety and depression will be discussed in greater details in the next section of this chapter. Psychosocial workplace factors have also been shown to be important risk factors for low back pain. It was

found that job dissatisfaction, poor work relations, lack of social support in the workplace, demands and stress and perceived ability were associated with an increased occurrence of low back pain (Hoy *et al.*, 2010). Other occupational factors have been shown to be associated with low back pain (Hoy *et al.*, 2010). A systematic review found that manual handling, bending, twisting and whole-body vibration are risk factors for low back pain (Hoogendoorn *et al.*, 2000).

Moreover, the cultural background of patients was also found to be an important factor influencing individual's experience of LBP and its development to CLBP, although one commonly underestimated by healthcare providers (Seibert *et al.*, 2002). O'Shaughnessy & Tilki (2007) define culture as 'beliefs, perceptions, interpretations and behaviours within an individual's social setting and environment'. Culture is found to be strongly related to ethnic, religious and social attitudes and behaviours (Seibert *et al.*, 2002).

It can be argued that cultural influences can affect people's perceptions of pain; in Islamic culture, for example, pain is seen as a 'test' from Allah, which one needs to accept with patience and perseverance (Purnell, 2012). Thus, the more religious a person, the less likely they are to complain about being in pain. People's tendency to complain about pain can vary pursuant to their ethnic origins. For example, in Japan, it is less acceptable for men to complain about pain (Hobara, 2005). The culture in most Arabic countries also means it is less acceptable for men to complain of pain (Kulwicki, 2008), predominantly owing to the fact that men think that it is shameful to express their pain, which is recognised (only by them) as a sign of weakness. In Islamic countries, Muslims

accept pain because they trust in Allah, God, to relieve it. This is why they are more likely to cope with pain using prayer (Kulwicki, 2008; Purnell 2012). Although, these studies considered pain in general, this also can be relevant for LBP as it one type of pain that individual may have.

The transition from acute to chronic low back pain (see section 2.3) is complicated, and many individual, psychosocial and workplace-associated factors may play a part (Koes *et al.*, 2010; Patrick, Emanski & Knaub, 2014). In this respect, increasing evidence indicates that psychosocial factors, including stress, anxiety, depression and certain types of pain behaviour, are significantly associated with the transition from acute to chronic low back pain (Nordstoga *et al.*, 2017; Steenstra *et al.*, 2017; Wippert *et al.*, 2017; Alhowimel *et al.*, 2018; Brunner *et al.*, 2018 ; Beneciuk *et al.*, 2019 ; Alamam *et al.*, 2019). In a systematic review, Wertli (2014) highlighted the moderating effect of fear-avoidance beliefs on treatment efficacy in LBP patients and suggested that the presence of fear-avoidance beliefs is predictive of progression from acute LBP to CLBP (Wertli *et al.*, 2014). A recent systematic review found an association between disability and levels of pain following physiotherapist treatment and baseline psychosocial factors; the greater the level of disability and pain reported, the higher the scores in fear avoidance and catastrophising (Alhowimel *et al.*, 2018). Wippert *et al.* (2017) indicates that psychosocial risk factors which contribute to chronic low pain development are related to cognitive beliefs (e.g., fear of pain, avoidance strategies and endurance), emotional states (e.g., anxiety and depression) and distress and social context (e.g., social support and healthcare context). Brunner *et al.* (2018), meanwhile, identified that kinesiophobia, pain-related fear and depressive mood are predictors for developing persistent LBP and disability.

Table (2) shows a list of individual, psychosocial and occupational factors, which have been identified as risk factors either for the occurrence of low back pain or for the development of chronicity.

**Table 2: Risk factors for occurrence and chronicity of low back pain (Adapted from Koes, Van Tulder, and Thomas, 2006; Wippert *et al.*, 2017; Brunner *et al.*, 2018)**

| <b>Risk factors</b> | <b>Occurrence of LBP</b>  | <b>Transition from LBP to CLBP</b>  |
|---------------------|---|---|
| <b>Individual</b>   | Age; physical fitness; weakness of back and abdominal muscles; smoking  | Obesity; low educational level; high levels of pain and disability  |
| <b>Psychosocial</b> | Stress; anxiety; negative mood or emotions; poor cognitive functioning; pain behaviour  | Distress; depressive mood; somatisation   |
| <b>Occupational</b> | Manual material handling; bending and twisting; whole body vibration; job dissatisfaction; monotonous tasks; poor work relationships and social support | Job dissatisfaction; unavailability of light duty on return to work; job requirement of lifting for three quarters of the day |

The prognosis is moderately optimistic for patients with chronic low back pain (Costa *et al.*, 2009). Patients with recent onset, non-radicular chronic low back pain can be reassured that they have a good chance of recovery (Costa *et al.*, 2009; 2012). The prognosis is less favourable for those who have taken previous sick leave for low back pain, have high disability levels or high pain intensity at onset of chronic low back pain, have lower education and perceive themselves as having a high risk of persistent pain (Costa, *et al.*, 2009; Kamper *et al.*, 2015; Pinheiro *et al.*, 2016).

In terms of recovery from CLBP, at one year, those with chronic low back pain usually continued to have moderate pain and disability (Costa *et al.*, 2012). People at higher risk of long-term disability included those with poor coping skills or with fear of activity (2.5 times more likely to have poor outcomes at one year) (Chou & Shekelle, 2010), and those with a poor ability to cope with pain, functional impairments, poor general health, or a significant psychiatric or psychological component to the pain (Chou & Shekelle, 2010).

The next section will discuss the psychosocial factors and how they contribute to the transition from acute to chronic LBP.

## **2.5. Psychosocial Factors Contributing to the transition from acute to chronic LBP**

A number of psychological (i.e. cognitive and emotional), behavioural and social/environmental risk factors have been identified as having an influence on developing and long-lasting LBP (Waddell & Burton, 2005; Moore & Stout, 2010; Ramond *et al.*, 2011; Pinheiro *et al.*, 2016). The cognitive factors include pain catastrophising, expectations and fear-avoidance pain beliefs (Waddell & Burton, 2005; Borkum, 2010; Michael *et al.*, 2011). The emotional factors include depression, anxiety, pain-related fear, distress and anger (Borkum, 2010; Nicholas *et al.*, 2011; Ramond *et al.*, 2011). The behavioural factors include pain behaviour and avoidance behaviour (Moore & Stout 2010), whilst the social/environmental factors include work stress, low job satisfaction, the belief that work will exacerbate the pain and low social and other support from work (Waddell & Burton, 2005; Moore & Stout, 2010; Froud *et al.*, 2014).

Several studies have demonstrated that psychological factors and social factors have an integral influence on the pain experience (LeDoux, 2003; Ochsner *et al.*, 2006; Lohnberg, 2007; Tracey & Mantyh, 2007; Brown *et al.*, 2008a; Leknes & Tracey, 2008; Somers *et al.*, 2009; Main *et al.*, 2010; Jensen *et al.*, 2012; Froud *et al.*, 2014).

In the case of chronic pain, psychosocial factors are found to contribute to the development and persistence of the condition, in addition to being predictors of future disability (Melzack, 1999; Al-Obaidi & Nelson, 2000; Greenwood *et al.*, 2003; Gracely & Geisser, 2004; Brown *et al.*, 2008b; Apkarian & Baliki, 2009; Apkarian & Hashmi, 2011).

Psychosocial factors can be classified into positive and negative factors, which are known to have a different effect on pain and its associated suffering (Keefe *et al.*, 2004; Leknes & Tracey, 2008; Wright *et al.*, 2011). Pain acceptance, hope, positive expectations and high job satisfaction are all recognised as having a positive effect on pain, hence being considered positive psychosocial factors (McCracken, 1998; McCracken *et al.*, 1999; McCracken & Eccleston, 2003; Viane *et al.*, 2003; Keefe, Rumble, 2004; McCracken & Eccleston, 2005; Creamer *et al.*, 2009; Wright & Wren, 2011). In contrast, the presence of a high level of negative psychosocial factors (e.g., anxiety, fear, catastrophising, anger, low job satisfaction, and a lack of support from family and work) were found to have a negative effect on the experience of pain and were further recognised as influencing the onset of new episodes of pain (Vlaeyen & Linton, 2000; Keefe & Rumble, 2004; Somers & Keefe, 2009; Wiech & Tracey, 2009; Edwards *et al.*, 2011).

Understanding the effects of these factors on pain will clarify their impact on the treatment outcomes, which is key to enhancing treatment efficiency; therefore, depression, pain-related fear,

pain catastrophising, avoidance behaviour and work-related factors will all be discussed in the next sub-sections.

### **2.5.1. Depression**

Depression is one of the negative psychological factors known to have an integral impact on the experience of CLBP (Linton & Shaw, 2011). Its prevalence in patients with CLBP is very high when compared to the general population; approximately 2–3 times greater (Moore & Stout, 2010). It has been found that an average of 62% of patients with CLBP suffer from depression (Sinel *et al.*, 1996). The main features of depression are feelings of low mood, hopelessness and misery (Moore & Stout 2010). It has been shown that depression in patients with chronic low back pain is associated with high pain intensity and a lack of an explanation for the cause of their pain by medical diagnostic investigation (e.g., X-ray and MRI)(Weickgenant *et al.*, 1993; Fishbain *et al.*, 1997; Moreno *et al.*, 1999).

Several studies have found that depression was very common amongst patients with persistent pain (Keefe & Somers, 2010). Frymoyer (1980) demonstrated that there is a link between depression and chronic back pain (Frymoyer *et al.*, 1980). Studies have also shown that depression is a good predictor of pain intensity in patients with rheumatoid arthritis (Kojima *et al.*, 2009).

There are many consequences of depression when it develops in patients with CLBP (Moore & Stout, 2010). The level of disability, functional impairment, sick leave duration and use of health care are all known to increase when CLBP patients develop depression (Moore & Stout, 2010;



Linton & Shaw, 2011). Moreover, some studies have shown that depression is associated with poor response to treatment (Ramond *et al.*, 2011).

### **2.5.2. Pain-related Fear**

Fear of increased pain when carrying out work or other activity is one of the emotions known to influence the pain experience (French *et al.*, 2007). Psychologically, fear in general is defined as an emotional response to a threat (e.g., dangerous animal) (Leeuw *et al.*, 2007); pain-related fear, on the other hand, is considered to be an excessive fear that develops in response to a threat which, in this case, is perceived as a stimulus relating to pain (Somers, 2009). It has been shown that avoidance behaviours (e.g., escape) are one of the major consequences of pain-related fear (Lethem, 1983; Vlaeyen & Linton, 2000; Pflingsten *et al.*, 2001; Keefe, 2004). Thus, the physical disability amongst individuals with chronic pain has been proven in numerous studies to be maintained by pain-related fear (Waddell *et al.*, 1993; Crombez *et al.*, 1999a; Vlaeyen & Linton, 2000; Heuts *et al.*, 2004; Elfving *et al.*, 2007); and therefore, pain-related fear is considered to be a predictor of pain and disability in this group of individuals, and acts as an obstacle to recovery (Lethem, 1983; Waddell, 1993; Al-Obaidi *et al.*, 2000, 2003; Peters *et al.*, 2002; LeDoux, 2003)

Al-Obaidi *et al.* (2000, 2003) conducted two studies in patients with CLBP, with the objective to examine the influence of anticipation and fear of pain on spinal isometric strength and on walking velocity. The authors used two independent visual analogue scales (VASs): one to measure the anticipation of pain, either prior to the isometric test, in the first study, or prior to walking, in the second study; and the second to measure the actual pain intensity during the isometric strength test

or walking. The fear-avoidance beliefs questionnaire (FABQ) and the disability belief questionnaire (DBQ) were applied in order to measure the participants' fear of pain and disability beliefs. Strong evidence found that isometric strength deficit and alterations in the velocity of preferred and fast walking of patients with CLBP were strongly related to pain anticipation and fear-avoidance beliefs.

Crombez (1999) investigated whether pain-related fear is causing more disability than pain itself, and also whether pain-related fear is a good predictor of disability in patients with CLPB. This study was also dependent on subjective self-reported measures of pain-related fear, including FABQ, the Tampa Scale for Kinesiophobia (TSK) and the Pain Anxiety Symptoms Scale (PASS). This study showed that the fear of pain is considered to be a good determinant of pain and pain-associated disability in this group of patients, and also contributes to a greater pain-related disability in respect to physical activities compared to pain by itself.

Pain-related fear appears to be developed in individuals as a result of their catastrophising thinking of pain (misinterpretation or negative appraisal) (Vlaeyen & Linton, 2000).

### **2.5.3. Pain Catastrophising**

The pain catastrophising that occurs during the experience of pain is an over-exaggerated thought that negatively interprets pain as harm (Turner & Aaron, 2001). An experimental study completed by Sullivan *et al.* (2001) aimed at identifying the influences of catastrophising on the experience of experimental pain—in this case, the immersion of an arm into ice water. Participants, who were undergraduates (n=120), completed the Pain Catastrophising Scale (PCS) and accordingly were

asked to provide estimates of expected pain and emotional distress prior to immersing their arm into ice water. It was revealed that high pain catastrophising increases both pain intensity and emotional distress. A study completed amongst a sample of pain-free individuals who were classified as high or low pain catastrophising according to the Pain Catastrophising Scale (PCS) demonstrated that the level of fear experienced in regard to a painful threat in those who had a high level of catastrophising was more than in those who demonstrated a low level of catastrophising (Crombez *et al.*, 1998).

#### **2.5.4. Avoidance Behaviour**

Avoidance behaviours (escape) are a result of the fear of pain when pain is anticipated; this is termed as fear-avoidance and was first introduced to the literature by Lethem (1983). Fear-avoidance behaviours are driven by the individual's negative beliefs and expectations that engagement in physical activities will induce more pain and pain-associated suffering (Crombez, 1999b; Pflingsten, 2001). Such behaviours provide an example of how cognitive errors, as in the case of fear-avoidance pain beliefs, in addition to negative perceptions, such as pain-related fear, can have a negative impact on pain, and subsequently create further movement limitations and disability (Vlaeyen & Linton, 2000). A patient suffering with CLBP, for example, might be inclined to take actions to avoid any unnecessary back-impacting movements in an effort to circumvent possible pain and subsequent damage. This belief could then restrict the individual's movement and, as a result, affect their future behaviours and actions (Vlaeyen & Linton, 2000).

According to the fear-avoidance model (Vlaeyen & Linton, 2000) (see Figure 1), avoiding physical activities for long periods of time—especially in the case of chronic low back pain patients—will lead to disability and sometimes depression (Vlaeyen & Linton, 2000; Al-Obaidi & Al-Zoabi, 2003).

### **2.5.5. Fear-Avoidance Pain Beliefs**

The fear-avoidance beliefs questionnaire (FABQ) was developed with the aim of assessing how physical activity and work affect patients' low back pain depending on their beliefs (Waddell & Newton, 1993). Waddell & Newton (1993) confirmed that there is a strong relationship between fear-avoidance beliefs and work absenteeism due to back pain. Other studies have also demonstrated that patients with acute LBP are highly likely to develop physical disability and difficulty in returning to work within a month or more due to their fear-avoidance beliefs; this has proven to play an important role in the transition of acute LBP to CLBP (Klenerman *et al.*, 1995; Fritz *et al.*, 2001).

Expectations and beliefs are recognised as having an integral effect on the pain experience of patients feeling pain-related fear (Borkum, 2010). Negative expectations mediate the effect of pain catastrophising, in addition to acting as a good predictor of pain and disability in chronic pain patients (Sullivan, 2001). The fear-avoidance model (Figure 1) elaborates how fear-avoidance contributes to the development of chronic musculoskeletal pain (Vlaeyen & Linton, 2000). The model poses two pathways of behavioural response with regard to fear; namely, confrontation and avoidance.



**Figure 1: A schematic representation of the “fear-avoidance model”. (with kind permission of the key author of Vlaeyen and Linton (2000))**

To summarise, the avoidance pathway—which is the one that maintains the pain experience—occurs when pain is interpreted as threatening as a result of pain catastrophising, which is strongly associated with negative expectations and, as a result, could lead to pain-related fear. The fear of pain subsequently leads to avoidance behaviours, which, as a consequence, result in disability, depression and disuse. In the diagram (Figure 1), it can be seen clearly that disuse and disability account for maintaining the pain experience and thereby the continued running of the avoidance pathway. In contrast, the confrontation pathway occurs when pain is not interpreted as a threat; hence, there will be no pain-related fear, and the individual can thus confront daily activities that enhance recovery.

### **2.5.6. Work-related Factors**

Work-related factors are one of the social/environmental risk factors whose interaction with other psychological and behavioural factors have been found to have an influence on the persistence of CLBP (Waddell & Burton, 2005; Moore & Stout, 2010; Froud *et al.*, 2014). Workplace factors consist of the perceptions of employees (e.g., beliefs that work is harmful, job dissatisfaction, lack of support in work and high work-load) and contextual factors (e.g., the nature of work, an unmodifiable work schedule, a lack of communication between workers, uncooperative co-workers, inappropriate policies for sickness absence and return to work) (Kendall, Linton & Main, 1997; Moore & Stout, 2010; Nicholas *et al.*, 2011).

A prospective study of Norwegian nurses' aides, who were LBP-free at baseline or otherwise had experienced a minor episode of LBP in the preceding three months, found that a workplace that is characterised by a lack of social support from supervisors and colleagues, as well as a lack of worker communication, was associated with an increase in both the intensity of LBP and in the number of days' sick leave due to LBP at follow up (Eriksen, Bruusgaard & Knardahl, 2004). In the same population, engagement in work that was biomechanically demanding was found to be a predictor of sick leave because of LBP (Eriksen, Bruusgaard & Knardahl, 2004).

The influence of work-related psychosocial factors on the onset of new episodes of LBP was investigated in another cohort study of workers (n = 2821) (Clays *et al.* 2007). The study reveals that the increased prevalence of LBP was found to be associated with an apparent lack of social support in the work environment, as well as job dissatisfaction and occupational stress (Clays *et al.*, 2007).

In sum, psychosocial and behavioural factors have been found to play an integral role in the development and maintenance of CLBP. Such factors should be considered by healthcare providers owing to their impact on the treatment outcomes. The next section will review the models for the management of LBP.

## **2.6. Low Back Pain Management Models**

### **2.6.1. Biomedical Model**

The biomedical model has been the dominant model used by healthcare professionals in most Western countries since the mid-19<sup>th</sup> Century (Engel, 1977). This model addresses only the pathology, biochemistry and physiology of a condition (Moseley, 2003). In the case of CLBP, the care provider in the biomedical model treats the spine rather than the patient, meaning that they do not address LBP-related disability as an illness but rather as a purely physical condition (Waddell, 1987).

In the biomedical model, the healthcare provider depends on objective testing (e.g., X-ray, MRI and physical test) in diagnosing the condition, and therefore does not direct attention towards patients' subjectivity and the associated psychological, environmental and social factors influencing the condition (Engel, 1977).

In brief, this model deals with the anatomy, physiology, biology, pain mechanisms, tissue response to injury and objective clinical testing, and aims at relieving the symptoms of the disease through the application of an appropriate chemical substance for the affected structure of the body.

## 2.6.2 Bio-psychosocial Model

The bio-psychosocial model was introduced with the aim of overcoming the limitations in the biomedical model (Waddell, 2004). It describes pain as an illness, as opposed to a physical disease (Waddell & Burton, 2005). The bio-psychosocial model contrasts with the traditional biomedical model by incorporating the biological, psychological (e.g., emotions, behaviours and thoughts), and social (socio-economical, socio-environmental and cultural) factors (Waddell & Burton, 2005; Turk & Okifuji, 2002). This model emphasises that the interactions between these three factors play an integral role in understanding health, illness and healthcare delivery (Turk & Okifuji, 2002; Waddell & Burton, 2005).

The bio-psychosocial model, therefore, recognises that psychological and social factors also contribute to the development and persistence of chronic musculoskeletal pain, including CLBP (Waddell, 2004); and that therefore the management of such chronic pain requires a multifactorial approach (Waddell & Burton, 2005). In respect to rehabilitation, such management combines physical and psychological therapies applied by a professional such as physiotherapist to target all the dimensions of chronic pain, as suggested by the National Institute for Health and Care Excellence (NICE) guidelines (NICE, 2016). This approach, therefore, aims to address not only the pathology of pain, as in the biomedical model, but all pain dimensions, including its physiological, cognitive, emotional, social and behavioural dimensions (Elven *et al.*, 2015).

Furthermore, chronic pain management according to the bio-psychosocial model should focus not only on pain relief but also on helping a patient, who is the centre of the care, to be in control of their pain rather than being its victim. From a bio-psychosocial perspective, therefore, the adequate



management of chronic musculoskeletal pain requires a multifactorial rehabilitation applied by same professional (e.g., physiotherapist) as mentioned above according to NICE guidelines (Waddle, 2004; NICE, 2016; Saragiotto *et al.*, 2016).

## **2.7. Management of Chronic Low Back Pain**

The primary goals of CLBP treatment are reducing pain, restoring normal activity, increasing confidence and helping the patient to be more active (Moore & Stout, 2010). The management of chronic musculoskeletal pain comprises pharmacological treatment (e.g., analgesics, antidepressants and anticonvulsants) and non-pharmacological treatment (psychological therapies, multidisciplinary rehabilitation, spinal manipulation, acupuncture, massage, exercise and related therapies, and various physical modalities) (Almeida *et al.*, 2018). For the purpose of this thesis, the non-invasive treatment (pharmacological and non-pharmacological) will be discussed in the following subsection.

The management of CLBP demands a multidisciplinary treatment approach that effectively addresses all of the physiologic, cognitive, emotional, social and behavioural dimensions (O'Sullivan *et al.*, 2015). A Cochrane systematic review of 41 RCTs provides moderate quality evidence for the effectiveness of a bio-psychosocial multidisciplinary rehabilitation intervention in improving functional status and reducing pain, compared with usual care for CLBP; and for same outcomes, it provides low quality evidence for such treatment compared to physical treatment (Kamper *et al.*, 2015). Kamper *et al.* (2015) who found that multidisciplinary bio-

psychosocial treatment for patients with CLBP is more effective than physical treatments for work outcomes.

## **2.7.1. Non-invasive treatment**

### **2.7.1.1 Non-pharmacological intervention**

Many patients with non-specific LBP will improve over time, regardless of the treatment received. As a result, the National Institute for Health and Care Excellence (NICE) in the UK, and the American College of Physicians (ACP) in the US now recommend minimal, if any, treatment as the starting point in care (NICE, 2016; Qaseem *et al.*, 2017). Advice, reassurance and encouragement of physical activity continue to be recommended as first line care in guidelines for patients with non-specific LBP. UK and US guidelines also reinforce the importance of teaching patients how to self-manage their LBP (NICE, 2016; Qaseem *et al.*, 2017).

Second line non-pharmacological options include manual therapy (such as spinal manipulation) and psychological therapies (cognitive behavioural therapy is preferred) (NICE, 2016). In order to obtain permanent, effective recovery from disability and pain, the UK and US guidelines recommend that manual and psychological therapies (e.g., CBT) should be used as part of a treatment programme combined with exercise (NICE, 2016; Almeida *et al.*, 2018; Qaseem *et al.*, 2017). This is contrary to the previous guidelines, which advised the use of acupuncture and electrotherapies for LBP treatment.—. For patients with CLBP, both UK and US guidelines endorse more complex and intensive treatments such as structured exercises, psychological therapies (cognitive behavioural therapy) and combined physical and psychological therapies.

These guidelines continue to recommend exercise for CLBP but now also endorse various specific types of exercise such as Tai Chi, Yoga, and aerobics (NICE, 2016; Qaseem *et al.*, 2017; Almeida *et al.*, 2018).

Both US and UK guidelines recommend psychological therapies using a cognitive behavioural approach for managing low back pain as part of a multifactorial treatment package including exercise, with or without manual therapy (spinal manipulation, mobilisation or soft tissue techniques such as massage) (Almeida *et al.*, 2018; NICE, 2016; Qaseem *et al.*, 2017). Physiotherapists should therefore consider a combined approach to treatment incorporating both physical and psychological components. The cognitive behavioural approach may be an appropriate psychological component of treatment for people with persistent low back pain. This cognitive behavioural approach is recommended when physiotherapists assess that patients have significant psychosocial obstacles to recovery (for example, avoiding normal activities based on inappropriate beliefs about their condition) or when previous treatments have not been effective (NICE, 2016; Qaseem *et al.*, 2017; Almeida *et al.*, 2018).

#### **2.7.1.2 Pharmacological interventions**

Advising that medicines should only be considered as a form of treatment by those who have not seen a big enough change from non-pharmacological interventions (such as those discussed above), current clinical recommendations have strongly dissuaded patients from using prescriptive medication if other options are available (NICE, 2016; Van Wamberbeke *et al.*, 2017). Further

guidelines advise that such prescriptive pharmacological remedies should only be proposed by healthcare workers for short-term use, prescribing the smallest possible dose. This has been concluded after analysing a range of side-effects that come with such medication, including issues with the gastrointestinal system (NICE, 2016; Qaseem *et al.*, 2017).

The UK guidelines directly advise individuals to avoid opioids in treating chronic LBP (NICE, 2016). Paracetamol is one such a medication that is no longer advised for any LBP patients, regardless of the extremity of the condition (NICE, 2016; Qaseem *et al.*, 2017); rather, the guidelines set within Belgium, the UK and the US advocate the use of non-steroidal, anti-inflammatory prescriptions (NICE, 2016; Qaseem *et al.*, 2017; Van Wamberbeke *et al.*, 2017). This aspect of these guidelines is supported by a systematic review, which found this kind of medicine to be effective for patients with chronic LBP (Machado *et al.*, 2017; Amedia *et al.*, 2018).

## **2.8 Physiotherapy treatment of CLBP**

Physiotherapy is considered to be integral to the treatment of the physical aspects of musculoskeletal conditions, and it plays a significant role in managing chronic pain (e.g., CLBP) (Connaughton & Gibson., 2016; Macphail, 2018). There are many interventions offered by physiotherapists, including exercise, manual therapy, mobilisation, advice and passive modalities, such as electrotherapy (Bergman, 2007; van Middelkoop *et al.*, 2010; Foster & Delitto, 2011). The differences seen across the full range of physiotherapy approaches is far greater than within the

guidelines as discussed earlier (NICE, 2016; Qaseem et al., 2017; Almeida et al., 2018; Macphail, 2018). The Maitland, McKenzie and the traditional orthopaedic medicine approaches are perhaps the most bio-medical focused, placing emphasis on finding and treating the tissues that is the cause (Atkins et al., 2010; Fersum et al., 2009). Other approaches attempt to classify patients that need more psychosocial input, placing the most emphasis on a hands-off approach to address psychosocial aspects (Fersum, 2009; Lee, 2001; Butler & Moseley, 2013). This approach is based on an understanding of the importance a patient's perception has on their symptoms and thus the benefits of education and a graded return to normal activities.

In terms of managing LBP within physiotherapy settings, a range of research supports the fact that single interventions are less capable than targeted multidimensional interventions (O'Sullivan, 2012); further, exercise therapy is less capable in managing mental and physical behaviour than specifically designed behavioural management interventions (Åsenlöf, Denison & Lindberg, 2009). Exercise and manual therapy are also less capable in managing LBP than the patient-centred multidimensional behavioural approach, which specifically focuses on dysfunctional lifestyle, mental, pain and movement factors (Fersum, O'Sullivan & Kvale, 2011). A recent systematic review suggests specific exercise and passive interventions are more beneficial for reducing measures of pain, whilst psychological input and general exercise are more targeted towards psychosocial measures (Macphail, 2018). It reveals that comprehensive CBT and functional restoration programmes are effective. Pain education approaches involving pain neurophysiology

education and pain acceptance were both effective compared with more traditional back school and pain avoidance approaches respectively (Macphail, 2018).

People with long-term physical health conditions and chronic pain are two to three times more likely to experience mental health problems, with increased risk of depression ([https://www.who.int/mental\\_health/evidence/special\\_initiative\\_2019\\_2023/en/](https://www.who.int/mental_health/evidence/special_initiative_2019_2023/en/) Accessed 29/12/19). A recent survey of physiotherapy practice found that 41% of physiotherapists reporting treating people with a co-morbid mental illness every day, and more than 75% reported treating those with co-morbid mental ill-health at least weekly (Connaughton & Gibson., 2016). CLBP patients with psychosocial, psychological and social, risk factors are known to have poorer outcomes and increased management costs (Grimmer-Somers *et al.*, 2008; Nicholas *et al.*, 2011). The psychosocial risk factors that predict disability in LBP patients are now included in most LBP guidelines (NICE, 2016; Qaseem *et al.*, 2017; Almeida *et al.*, 2018).

Physiotherapists are aware of the importance of psychosocial factors in these patients (Scheermesser *et al.*, 2012) but feel underprepared and may sometimes stigmatise these patients (Synnott *et al.*, 2015). Physiotherapists need to be competent in addressing patients' psychosocial well-being in order to address the requirements of the WHO's Rehabilitation 2030 Agenda (<https://www.who.int/rehabilitation/rehab-2030-call-for-action/en/> Accessed 29/12/19).

Despite strong evidence for the effectiveness of psychosocial therapies in the management of chronic pain such as CLBP, globally, there is insufficient access to skilled psychological practitioners (Patel *et al.*, 2018). Therefore, there is a drive in many countries for physiotherapists, and others, to upskill in psychological therapies, such as low-intensity cognitive behavioural

therapy (CBT), for integration into routine Psychologically Informed Physiotherapy Practice (PIPP) (<https://www.nes.scot.nhs.uk/education-and-training/by-discipline/psychology/multiprofessional-psychology.aspx> Accessed 29/12/19). PIPP often involves CBT skills, in combination with ‘traditional’ physiotherapy, delivered by a physiotherapist (Keefe *et al.*, 2018). While many physiotherapists demonstrate positive attitudes and beliefs regarding PIPP, they require further professional development in this area to instil greater confidence (Driver *et al.*, 2017).

A systematic review indicated that psychologically based treatments can enhance physical therapy interventions for patients at high risk of CLBP-related disability (Foster *et al.*, 2013; Chou *et al.*, 2016). One successful risk screening approach for LBP uses the nine-item STarT Back Tool (Hill *et al.*, 2008) to screen for modifiable prognostic factors and thus determine patient at risk for developing persistent LBP-related disability, and then uses that information to match patients with appropriate care pathways. Previous studies have also shown how physiotherapists have played an integral role as treatment providers of psychologically-informed physical therapy (PIPT), finding significant improvements in patient LBP disability and quality of life outcomes, while also resulting in less time off work and greater healthcare cost savings when compared with standard care (Hill *et al.*, 2011; Foster *et al.*, 2014; Beneciuk *et al.*, 2019).

As mentioned earlier (section 2.7.1.1), the guidelines recommended CBT for patients with significant psychosocial obstacles to recovery (for example, avoiding normal activities based on inappropriate beliefs about their condition) or who have previous failed treatments (NICE, 2016;

Qaseem *et al.*, 2017; Almeida *et al.*, 2018). They also recommend a combined approach to treatment incorporating both physical and psychological components (e.g., CBT).

One such psychological intervention is cognitive behavioural therapy (CBT), which is discussed in the next section.

## **2.9. Cognitive Behavioural Therapy (CBT)**

As highlighted by Monticone *et al.* (2013), Cognitive Behavioural Therapy (CBT) may be defined as a psychological management approach that can be implemented in the case of chronic pain, such as lower back pain, either on an individual basis, or in line with other therapies and approaches, including physical modalities and exercise.

CBT is geared towards the behavioural and cognitive elements inherent in the pain experience (Richmond *et al.*, 2015), and is concerned not only with social functioning, but also quality of life and overall function (Sellinger *et al.*, 2010). Essentially, CBT is centred on an in-depth and wide-ranging biopsychosocial pain framework that encompasses affective, behavioural, cognitive and physical aspects (van Geen *et al.*, 2007).



Moreover, it makes use of various principles, including redefining the concept of pain, shifting the perception from something that is recognised as threatening to something more understandable, and accordingly establishing personally relevant aims, planning how such aims can be achieved, and providing training on how to overcome obstacles and problems inhibiting progress (van Geen *et al.*, 2007; Moore & Stout 2010).

CBT is centred on making changes to how patients think, thereby revealing how pain-related beliefs could be challenged, ultimately influencing patient behaviours (Windt, 2008). The therapy involves a significant number of cognitive and behavioural interventions (Richmond *et al.*, 2018), but these may be broken down into key parts, including behavioural changes implemented in regard to particular activities (such as graded exposure approaches, operant treatment and pacing) and cognitive reconditioning (such as attention diversion, cognitive restructuring, imaging and relaxation techniques).

Although CBT is characterised by a structured approach to assessment and management, it is considered flexible, emphasising a personalised treatment in respect to the needs of patients. There are six interrelated phases of CBT, as shown in the Table (3); each phase demonstrates different elements of the multidimensional treatment (Turk *et al.*, 1994; Westbrook, Kennerly & Kirk 2011).

**Table 3: Six phases of CBT-Adapted from (Westbrook, Kennerly and Kirk 2011; Turk *et al.*, 1994)**

|                       |   |
|-----------------------|---|
| <b>CBT<br/>phases</b> | <b>Phase 1: Assessment</b>  |
|                       | This phase involves assessing information given from the patient and family through a series of self-reported measures and observational procedures to identify maladaptive beliefs that maintain |

|  |  |
|--|--|
|  | unhelpful behaviour. The information provided determines the most appropriate course of action and establishes baseline measures.  |
|  | <b>Phase 2: Reconceptualisation</b>  |
|  | Patients are often asked to maintain a self-report diary. This is intended to help patients challenge and question their maladaptive thoughts (e.g. “I am a failure in life because I am in pain”). Goals are set collaboratively with the patient.                    |
|  | <b>Phase 3: Skills Acquisition and Consolidation</b>   |
|  | The therapist uses various cognitive and behavioural strategies to teach patients how to deal with obstacles in their day-to-day lives. They collaboratively focus on problem-solving strategies, i.e. relaxation techniques/pacing/graded exposure/coping strategies. |
|  | <b>Phase 4: Skills Consolidation and Application</b>   |
|  | Patients are given homework to help reinforce the skills that they have learned.   |
|  | <b>Phase 5: Generalisation and Maintenance</b>   |
|  | Patients review homework and practice skills they have been taught. Potential problematic situations that may arise and ways to manage these are considered. Patients evaluate their progress and attribute success to their own coping efforts.                       |
|  | <b>Phase 6: Post-Treatment and Follow-Up</b>   |
|  | All aspects of therapy are reviewed. The therapist monitors and evaluates patients’ application of CBT to their life.  |

CBT is recognised as a complex intervention owing to the fact it comprises various components (operant, cognitive and respondent) that interact with one another (Lewin, 2006; Craig, 2008). These multiple components—and the context in which they were applied—affect the consistency with which CBT interventions can be implemented (Lewin, 2006; Carroll *et al.*, 2007; Craig, 2008). Indeed, it is recognised in the literature that the effectiveness of CBT varies across different studies and different populations (Sveinsdottir *et al.*, 2012).

## 2.10. Summary

The literature reviewed so far has emphasised that pain is a highly subjective and individualised experience. Chronic low back pain (CLBP) is considered to be one of the most common musculoskeletal complaints (Bybee *et al.*, 2009) and a major healthcare problem that causes disability, medical expenses and work absenteeism (Langevin and Sharman, 2007). While it may often develop due to physical pathology, involving structural damage, it may also occur in the absence of definite pathology. (McCracken and Samuel, 2007). The bio-psychosocial model, which is a combination of biomedical and psychosocial models, illustrates how CLBP develops (Feuerstein and Beattie, 1995), and several studies have demonstrated that the combination of psychosocial and behavioural factors have an integral influence on the pain experience. Understanding the effect of these variables on pain will clarify their impact on the treatment outcome, which is key for enhancing the treatment's efficiency.

Cognitive behavioural therapy (CBT) is one psychological pain management strategy that can be applied in the context of physiotherapy treatment (Brunner *et al.*, 2013). It aims not only to reduce pain but also to address the cognitive and behavioural aspects of the pain and associated impairment of quality of life (Lohnberg, 2007). The apparent effectiveness of CBT varies across different studies and populations, however. An in-depth qualitative study to explore the use of CBT in the physiotherapy management of CLBP is needed to improve understanding of the possible reasons for this variation in its effectiveness.

## 2.11. Research Aim

The purpose of this thesis is to generate an explanatory theory that provides an explanation and understanding of how, when and why some physiotherapists make a decision to apply CBT for CLBP patients, whereas others do not.

## 2.12. Research Questions

The research questions and their related PhD stages are summarised in Table 4.

**Table 4: Research questions and related PhD stages**

| Research Questions  | Stage of PhD                                    |
|---|---|
| 1. What evidence exists on the effectiveness of CBT for CLBP in the physiotherapy setting?  | First Stage:<br>Mixed methods systematic review |
| 2. What is known about the existing reasons behind the variation in the effectiveness of CBT?                                     |   |
| 3. What are the gaps in the existing knowledge about CBT applied in a physiotherapy context?                                      |   |
| 4. What factors influence physiotherapist's decision to use CBT in the management of CLBP?  | Second Stage:                                   |
| 5. What are the perceptions of CLBP patients, physiotherapists and managers of physiotherapy services about the use CBT for CLBP? | Primary Qualitative research                    |

### **2.13. Research Objectives**

- To review the literature systematically in order to identify studies exploring or explaining the process of implementing CBT to support the management of CLBP in a physiotherapy setting and the effectiveness of CBT provided in physiotherapy for CLBP.
- To explore the reasons contributing to the variation in the effectiveness of CBT applied in the physiotherapy context for CLBP.
- To identify the gaps in the existing knowledge about CBT applied in the physiotherapy context.
- To explore the perceptions of CLBP patients, physiotherapists and managers of physiotherapy services about the use of CBT for CLBP.
- To identify the factors influencing physiotherapists decision to use of CBT for CLBP.
- To identify the barriers CLBP patients face that can hinder them from applying what they learnt in CBT.
- To generate a grounded theory to explain and understand more clearly how, when and why some physiotherapists make a decision to apply CBT for CLBP patients, whereas others do not.

## **2.14. Contested nature of evidence review in GT studies and the chronology and development of my PhD:**

My interest in this topic area began with my master's level literature review on the different interventions that physiotherapists could use in the management of chronic low back pain. This left me with questions about CBT for CLBP and I wanted to explore these questions in my PhD. The review of the literature in the PhD, therefore, was focused on finding out how CBT is used and, based on the finding of the review, I designed the primary study on the basis of a grounded theory approach.

The aim of the PhD was to develop a grounded theory (see section 4.3.3.2). There are two contradictory perspectives about the utility of conducting a review of literature in research adopting a grounded theory approach (Giles, King & de Lacey, 2013). One perspective is to delay the literature review until after data collection and analysis or until codes and categories emerge (Glaser and Strauss, 1967; Glaser, 1978). The rationale for delaying the literature review is to avoid inhibiting the creativity of the researcher's analysis of emerging theoretical codes as well as to reduce the possibility of introducing preconceived ideas about the research phenomenon and data (Glaser and Strauss, 1967; Glaser, 1978; Giles, King & de Lacey, 2013).

The other perspective is to conduct a preliminary literature review prior to the study in order to provide an initial framework for the research study and to develop a level of understanding that serves to orientate the research (Bryant & Charmaz, 2007). It is argued that familiarity with the relevant literature can help researchers to enhance their theoretical sensitivity (see section 4.3.3.3) in respect to the data (Strauss & Corbin, 1990; Corbin & Strauss, 2008). Researchers can then

expand the review, or undertake a secondary review, during data collection and analysis (Charmaz, 2006).

I decided to undertake a mixed method review prior to the study so as to situate my study in relation to what is already known and to what is still not known in this field.

The next chapter will describe the first stage of this PhD thesis, in which a mixed-methods systematic review is performed with the aim of identifying the existing evidence of the effectiveness of CBT provided in physiotherapy for CLBP and, accordingly, to explore what is already known about possible reasons behind the variations that a range of studies have recognised in the effectiveness of CBT. The gap identified in the CBT literature is considered when designing the primary study.

## **CHAPTER 3: MIXED METHODS SYSTEMATIC REVIEW**

### **3.1. Introduction**

This chapter begins by explaining the type of review, it then presents the findings of the review. It goes on to discuss the challenges of conducting such a review in terms of finding studies that addressed the research objectives. The next section explains the decisions made about the synthesis of evidence. It then presents the sensitising concepts that inform the development of my research

design. Finally, this leads to a discussion of those results and the identification of the gaps in current knowledge.

### **3.2. Systematic Review Questions**

1. What evidence exists on the effectiveness of CBT for CLBP in physiotherapy settings?
2. What is known about the existing reasons behind the variations in the effectiveness of CBT?
3. What are the gaps in the existing knowledge about CBT applied in a physiotherapy context?

### **3.3. Methods**

I intended to carry out a mixed method systematic review (MMSR). This is a type of review that links quantitative with qualitative research, or outcomes with process studies (Grant & Booth, 2009; Saini & Shlonsky, 2012; Pluye & Hong, 2014). MMSR involves the synthesis of data or results from studies with diverse study designs (Grant & Booth, 2009; Pluye *et al.*, 2009). This type of review is applicable for public health, particularly with respect to complex and highly context-sensitive interventions (Armstrong *et al.*, 2008). It therefore seemed appropriate as a means to understand more clearly a complex intervention, such as CBT, in respect to a complex condition, such as CLBP. I wanted to look for explanatory information regarding how and why CBT is used in physiotherapy settings, and the possible reasons for the variations in its effectiveness in the context of CLBP, recognising that exploratory information in respect to these



questions could potentially be found in different types of studies (i.e. quantitative and qualitative studies).

A key element in all systematic reviews is synthesis of the results of multiple studies. In the case of mixed methods systematic reviews, this involves combining the results of quantitative studies (i.e. about what works) with the findings of qualitative studies (i.e. about how and why it works) in order to develop a holistic understanding of what works, to what extent, under which circumstances (Harden & Thomas, 2005; Grant & Booth, 2009; Saini & Shlonsky, 2012; Pluye & Hong, 2014). In order to achieve such a synthesis in a mixed methods systematic review, therefore, it is necessary to review a number of both quantitative and qualitative studies. As it turned out, the studies identified in my MMSR were mainly effectiveness studies, containing little explanation of how and why CBT is used for CLBP in physiotherapy settings. I identified very few qualitative studies, indeed only one qualitative study which was subsequently excluded because it was by the same authors of the related quantitative study. It therefore became apparent that I would not be able to complete a mixed methods systematic review because I was not able to identify the necessary mix of studies to develop a meaningful mixed methods systematic synthesis. This necessitated a transition to a narrative review, the evidence from the included studies is presented below in section 3.5.1.1.

A narrative review is a type of review that synthesises diverse types of evidence (qualitative and quantitative primary studies) through descriptive summaries instead of using statistics for example by carrying a meta-analysis (Dixon-Woods *et al.*, 2005; Grant and Booth, 2009; Pieper *et al.*, 2012; Paré *et al.*, 2015; Ferrari, 2015; Greenhalgh, Thorne & Malterud, 2018).

Meta-analysis (MA) is designed to synthesize data across studies and provide statistical evidence for a specific effect (Harrer *et al.*, 2019; Borenstein *et al.*, 2011). It is a method for statistically combining the results of studies that are included in a systematic review, for deriving a conclusion about the overall effects of an intervention (Neyeloff *et al.*, 2012). MA are conducted for particular types of review questions. For example, meta-analyses to evaluate the effect of an intervention, to assess strength of evidence, to investigate the cause of a rare disease, or to examine the prevalence of a condition or a belief (Gurevitch *et al.*, 2018). My review questions were not of this type. The second review question asked what is known about possible reasons for variation in the effectiveness of CBT (see section 3.2) and the objectives of my research were to obtain explanatory information about the process of implementing CBT (see section 2.13) to inform my study, and therefore it was not appropriate to carry out a meta-analysis.

Four of my included studies contained no explanatory information about the reasons for variation in the effectiveness or exploring the perception of CBT. A limited number of my included studies (n=4) did contain some explanatory information contributed to the sensitising concepts. However, this information tended to be the authors' opinions. Thus, the effectiveness studies (randomized controlled trials) were less useful in answering my research objectives as they lacked the explanatory information to explain the variation in the effectiveness of the CBT.

Even though my included studies were homogenous, a meta-analysis would not be consistent with my study objectives. It would not provide any information in relation to my review questions.

Therefore, I decided not to do meta-analysis because the aim of the review was to obtain explanatory information about the process of implementing CBT in physiotherapy for CLBP.

There was a lack of, or limited, explanation for how and why CBT is used. A gap in the research was identified, which informed the development of my research design to address this gap in my study.

This mixed methods review was carried out using the recommended searching and appraisal methods for systematic reviews in health care (Akers *et al.*, 2009; Higgins & Green, 2008).

### **3.3.1 Criteria for Studies Considered for this Review**

#### **3.3.1.1 Type of Studies**

As previously stated in Section 3.3, I began with the intention of carrying out a mixed method review. In mixed methods systematic reviews different study types are included (Booth *et al.*, 2013; Pluye and Hong, 2014). My first review question asked for what evidence exists on the effectiveness of CBT for CLBP in physiotherapy settings. This question aimed to identify studies exploring or explaining; the process of implementing CBT to support the management of CLBP and the effectiveness of CBT provided in physiotherapy for CLBP (see section 2.13). Because the aim of the review was to look for explanatory information or reasons for variation in the effectiveness of CBT (see section 2.13 and section 3.2), I included different types of studies. Such information could be found in cohort studies, randomised controlled trials (RCTs) and qualitative studies. Different study types can be synthesised through a mixed methods systematic review (Booth *et al.*, 2013; Pluye & Hong, 2014). My starting point, therefore, was to include, rather than exclude papers, in an effort to obtain as complete an explanation as possible of the phenomenon that was studied. This contrasts with conventional systematic reviews, which focus on a small

number of outcomes that can be synthesised through meta-analysis, and which therefore typically exclude a large proportion of all available studies.

The mixed methods systematic review included observational and interventional studies utilising quantitative, qualitative or mixed methods that relate to the use of applied cognitive behavioural therapy (CBT) to manage patients with chronic low back pain. In mixed methods research, both qualitative and quantitative studies are carried out alongside one another, and their data is complementary in respect to the fact that qualitative information explains quantitative results (O’Cathain & Thomas, 2006; Pope, Mays & Popay, 2007). Recently, it has been proposed that qualitative approaches can play a useful role in explaining the effectiveness of complex interventions such as CBT that include many components (Campbell *et al.*, 2000; Lewin *et al.*, 2009; Noyes & Lewin, 2011). This is because qualitative studies help in understanding the social and behavioural aspects of interventions that cannot be explored through quantitative approaches (Lewin *et al.*, 2009; Noyes & Lewin, 2011). Qualitative studies were included to help identify the possible existing reasons for the variation in the effectiveness of CBT. Cohort studies will add a value to this review since these studies reveal how long healthcare providers should continue CBT with patients.

Quantitative (RCTs and Cohort studies) and qualitative studies with interventions based on the principle of CBT, or those including both cognitive and behavioural components, were also included. Studies investigating the protocol of randomised control trials, letters to editors or conference papers were excluded since these are not primary research and provide no results

(Littlewood & May, 2013). Only studies that were published in peer-reviewed journals were included.

### **3.3.1.2 Type of Participants**

Studies that included male and female participants with non-specific CLBP, where the individuals were aged 18 and above, were included owing to the fact that LBP is likely to affect patients irrespective of their gender (Dunn & Croft, 2004; Jones & Macfarlane, 2005; Kent & Keating, 2005; Walker, Muller & Grant, 2004; O'Young *et al.*, 2008). Moreover, this helps to provide a more thorough and accurate insight into LBP epidemiology, which is recognised as being more prevalent amongst those aged 18 years and older (Leboeuf-Yde & Kyvik, 1998; Loney & Stratford, 1999; Goubert *et al.*, 2004; Walker *et al.*, 2004; Harkness *et al.*, 2005; Oksuz & Ergun, 2006). Also, owing to the nature of LBP, and its associated psychological issues, differences may be evident in populations younger than 17 years, which might therefore require different management programmes when compared with those for people aged 18 years and older (Watson *et al.*, 2002; Shehab & Jarallah, 2005). Studies were excluded if they focused on participants with specific low back pain caused by infection, metastasis, osteoporosis, rheumatoid arthritis or fracture, since such patients require different types of treatment. (Deyo, 2002; Greenhalgh & Selfe, 2006; Koes, Van Tulder & Thomas, 2006; Cohen, Argoff & Carragee, 2008; Rubinstein & Van Tulder, 2008). The review, therefore, focused on non-specific chronic low back pain (CLBP), defined as pain that occurs in the lumbosacral region without any specific physical cause or symptoms of disease (van Geen *et al.*, 2007). Chronic LBP was defined as back pain that persisted for three months or more (van Geen *et al.*, 2007). Studies in which subjects had different chronic musculoskeletal (MSK)

pain, such as neck pain, shoulder pain and low back pain, were only included if the data for CLBP patients was presented separately.

### **3.3.1.3 Type of Intervention**

Cognitive behavioural therapy (CBT) is defined as a psychological management strategy that targets the cognitive and behavioural aspects of the experience of pain (Monticone *et al.*, 2013). The components of CBT are operant, cognitive and respondent therapy, as explained previously in Chapter 2. Studies that investigated cognitive behavioural therapy (CBT) or treatment based on the principles of CBT were included. Moreover, studies with interventions that adopted both cognitive and behavioural components were included. Studies that used either a cognitive or behavioural approach alone were not considered to be CBT because they did not include both components.

In order to ensure a comparable baseline between the studies included in this review, studies with insufficient information about interventions, and those lacking clarification of important issues (e.g., what the intervention consists of) were excluded because the results of such studies could not be considered precise enough to provide evidence. Studies with interventions such as manual therapy or surgical intervention were also excluded owing to the fact, they lack relevance and expanded beyond the research question.

### **3.3.1.4 Type of Outcome**

Studies that used one of the following primary outcome measures for low back pain were included: pain intensity (e.g., visual analogue scale [VAS] or numerical rating scale [NRS]), work participation (return to work status or number of days of sick leave), functional status (e.g., the

Roland-Mirros disability questionnaire or Oswestry scale) and quality of life (e.g., Sickness Impact Profile) (Deyo *et al.*, 1998; Bombardier, 2000). Cognitive and behavioural outcomes, such as pain behaviour, level of anxiety, level of depression and cognitive errors, were also taken into account. Outcome measures other than those mentioned above (e.g., range of motion and muscle strength) were considered secondary outcomes since the evidence suggests that they do not have a significant effect in respect to changing the clinical status of the patient (Deyo *et al.*, 1998).

### 3.3.2 Literature Search Strategy for Identification of Studies

A sensitive literature search strategy was developed after many attempts to identify studies from electronic databases (Appendix 2). It was carried out based on the procedures established at the School of Health and Related Research (ScHARR), experienced librarians, discussion with a supervisory team of the search results returned by each attempt, and guidance from the Centre for Review and Dissemination (Akers *et al.*, 2009). The **P**opulation, **I**ntervention, **C**omparator, **O**utcome, **S**tudy design (PICOS) concepts used in the search strategy are shown in Table 5.

**Table 5: PICOS Concepts used in the current systematic review**

| <b>PICOS Concepts</b> |                            |
|-----------------------|----------------------------|
| <b>Population</b>     | Patients with CLBP         |
| <b>Intervention</b>   | CBT/physiotherapy          |
| <b>Comparator</b>     | No treatment/ waiting list |

|                     |  |
|---------------------|--|
| <b>Outcome</b>      | Pain intensity, work participation, functional status, quality of life                     |
| <b>Study design</b> | Observational and interventional studies using quantitative, qualitative or mixed methods. |

There were three main concepts used in this search strategy: chronic low back pain, cognitive behavioural therapy and physiotherapy. Free text and the medical subject heading (MeSH) of keywords were used and combined by Boolean logic (OR, AND) to ensure retrieval of as many relevant studies as possible. The indexing terms used in previous relevant good quality systematic reviews were checked in an effort to increase the pertinence and efficacy of the keywords in retrieving relevant studies (Liberati *et al.*, 2009).

An initial electronic search was done using the following databases: CINAHL plus full text, MEDLINE via Ovid, Cochrane library, Scopus, Pub Med, Web of Science, ASSIA and PsychINFO. Because each electronic database has a different functionality, the search strategy was adjusted accordingly when deemed necessary. The literature search was conducted on all full text studies published in peer review journals up to May 2014. These databases contain the majority of all health and related research literature (Greenhalgh, 2006).

In MEDLINE, CINAHL plus full text, Cochrane Library and PubMed databases, the following MeSH terms were used: cognitive therapy (Mesh term) for cognitive behavioural therapy, low back pain (Mesh term) for low back pain and physical therapy modalities and exercise therapy (Mesh term) for physiotherapy. Scopus, Web of Science, ASSIA and PsychINFO, however, do



not recognise MeSH terms and therefore keywords and their alternatives were searched instead. The electronic search strategy was limited to English language and human participants.

The reference lists of retrieved articles were screened to obtain additional relevant articles. All search results were exported to Endnote web (<https://www.myendnoteweb.com>).

### **3.3.3. Study Selection**

All duplicates were removed using Endnote web as well as by manual checking.

*First Screening:* done by three independent reviewers, who initially screened the title and abstracts of all studies identified by the electronic databases. Additional relevant studies were identified through a hand search of reference lists from the retrieved studies in this stage.

*Second Screening* I completed this screening independently by assessing the full text of all potentially relevant records. In this stage, the decision was made regarding the final number of records to be included in this review.

### **3.3.4 Assessment of Methodological Quality**

Numerous quality appraisal tools have been developed to critique the methodology of various study designs (Littlewood & May 2013). The methodological quality of individual studies was considered in order to establish further inclusion within the synthesis of this mixed methods systematic review. Studies with high quality will provide stronger evidence and have a more profound impact on the conclusion than studies with low quality (Greenhalgh, 2010; Bowling, 2014; Pope, Mays & Popay, 2007). The decision regarding inclusion or exclusion, based on

quality, was taken with regard to the most important flaws in each study design, since these flaws affect the results of the individual studies and consequently the conclusion of the review used these studies (Pope, Mays & Popay, 2007).

The methodological quality of the included studies (e.g., randomised controlled trial (RCTs) was assessed using the following critical appraisal tool:

### 3.3.4.1. The Cochrane Risk of Bias Tool (ROB)

Risk of Bias (ROB) in randomised controlled trials was assessed using the Cochrane Risk of Bias tools, as explained and supported by Furlan (2009). This tool used twelve methodological criteria, as shown in Table 6, all of which were recommended by The Cochrane Handbook for Systematic Reviews of Interventions (Higgins & Green, 2008) and the Cochrane Back Review Group (CBRG) (van Tulder *et al.*, 2003). One from a possible three assessments (yes, unclear or no) should be given for each criterion, where ‘yes’ means that the criterion has been met (Furlan *et al.*, 2009).

Studies were rated as having ‘low risk of bias’ when at least six of the twelve criteria were met. On the other hand, studies were rated as having a ‘high risk of bias’ when fewer than six of the criteria were met (Furlan *et al.*, 2009). The lower the risk of bias, the higher the quality rating of the study methodology (Higgins & Green, 2008; Furlan, 2009).

**Table 6: The Cochrane Risk of Bias Tool**

| Sources of Risk of Bias (Adapted from Furlan <i>et al.</i> , 2009) | Yes | No | Unclear |
|--|-----|----|---------|
|  |     |    |         |

|  |  |  |  |
|--|--|--|--|
| 1. Was the method of randomisation adequate?   |  |  |  |
| 2. Was the treatment allocation concealed?   |  |  |  |
| 3. Was the patient blinded to the intervention?  |  |  |  |
| 4. Was the care provider blinded to the intervention?                                      |  |  |  |
| 5. Was the outcome assessor blinded to the intervention?                                   |  |  |  |
| 6. Was the drop-out rate described and acceptable?   |  |  |  |
| 7. Were all randomised participants analysed in the group to which they were allocated?    |  |  |  |
| 8. Are reports of the study free of suggestion of selective outcome reporting?             |  |  |  |
| 9. Were the groups similar at baseline regarding the most important prognostic indicators? |  |  |  |
| 10. Were co-interventions avoided or similar?  |  |  |  |
| 11. Was the compliance acceptable in all groups?   |  |  |  |
| 12. Was the timing of the outcome assessment similar in all groups?                        |  |  |  |

**3.3.5 Clinical Relevance Assessment**

The clinical relevance of the RCTs included in this current review was scored using five questions recommended by the Cochrane Collaborative Back Review Group, as shown in Table 7 (van Tulder *et al.*, 2003; Furlan *et al.*, 2009). It has been suggested that these five questions enable the researcher to make decisions as to whether study results are applicable to other populations (Malmivaara *et al.*, 2006; Furlan *et al.*, 2009). Each item in the clinical relevance criteria was assigned a score of ‘Yes’ when the item was achieved. On the other hand, a score of ‘No’ was

assigned to the item if it was not achieved. A score of ‘Not reported’ indicates that such information was missing. Studies with three or more scores of ‘Yes’ were considered to have moderate-to-high

| Criteria (Adapted from Furlan <i>et al.</i> , 2009; van Tulder <i>et al.</i> , 2003)   | Yes | No | Not Reported |
|--|-----|----|--------------|
| 1. Are the patients described in detail so that you can decide whether they are comparable to those that you see in your practice? |     |    |              |
| 2. Are the interventions and treatment settings described well enough so that you can provide the same for your patients?          |     |    |              |
| 3. Were all clinically relevant outcomes measured and reported?  |     |    |              |
| 4. Is the size of the effect clinically important?   |     |    |              |
| 5. Are the likely treatment benefits worth the potential adverse effects?  |     |    |              |

clinical relevance (Malmivaara *et al.*, 2006).

**Table 7: Clinical Relevance Assessment**

### **3.3.6. Data Extraction**

Data were extracted from the studies using data extraction template according to the study design (e.g., quantitative). The data extraction templates used were tested by the supervisory team. In quantitative studies, data extraction sought to collect data on study participants, type of intervention and its provider, setting, outcome measures and results (See Appendix 3).

### **3.3.7. Methods of Data Analysis**

As mentioned earlier (Section 3.3.4), the methodological quality of all included studies was assessed using critical appraisal tools appropriate to the study design. I did a narrative synthesis because I could not complete a mixed methods systematic review due to a limited number of different study types, as mentioned earlier in this chapter (see section 3.3).

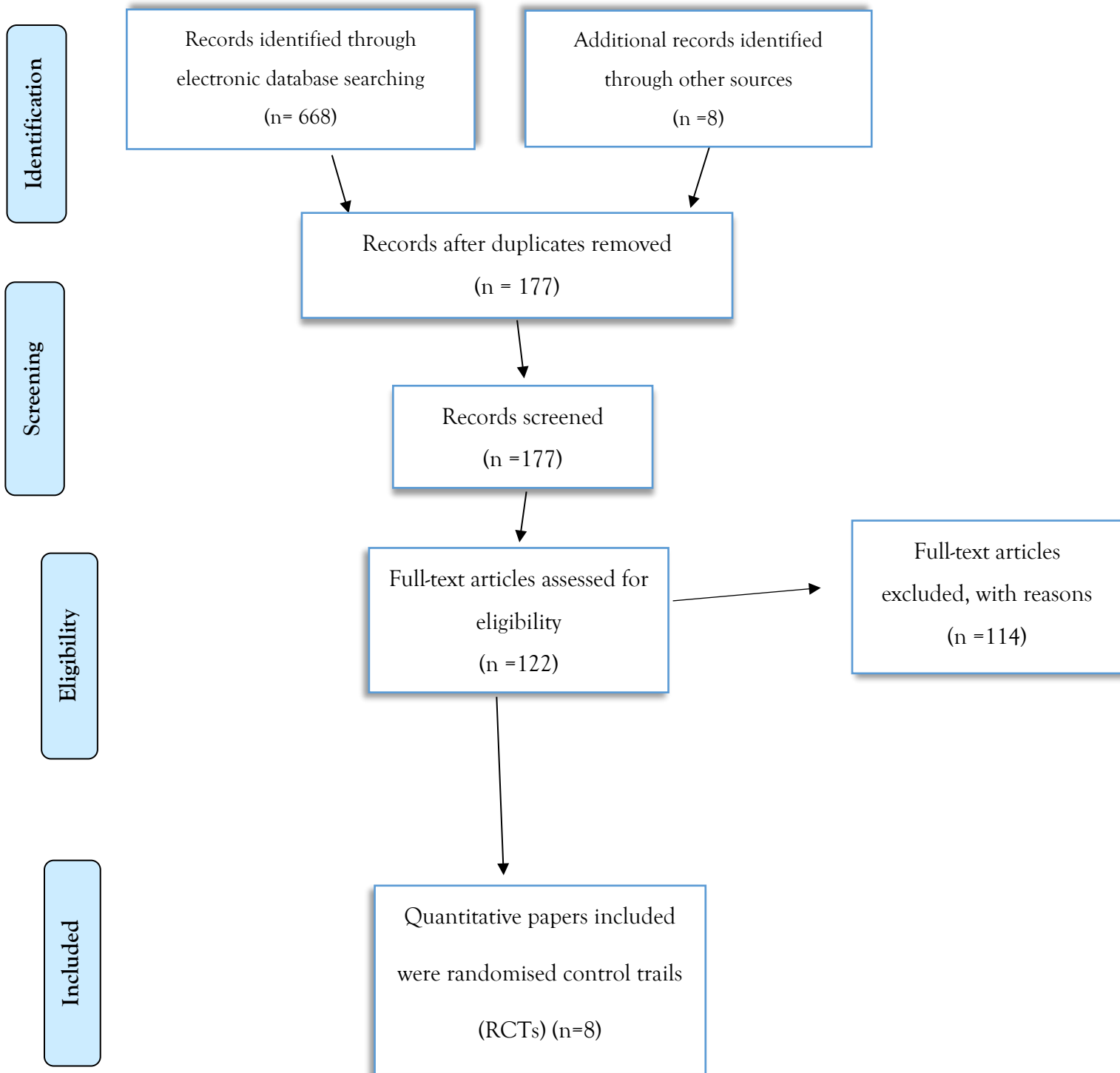
## **3.4 Results**

### **3.4.1. Identification of Studies**

The search of electronic databases identified 668 records, along with an additional eight identified through hand searching, as shown in Figure 2. The total number of records following the removal of duplicated records was 177 records. From the 177 records, 55 records were excluded during the first screening (initial screening of title and abstract). In the second screening, full texts of 122 records were read to make a final decision on eligibility. In this stage, 114 records were excluded

according to the eligibility criteria. A total of eight records were therefore found to meet the criteria (Appendix 4). These, eight records were quantitative papers (eight RCTs)

Figure 2. PRISMA flow diagram of Identification of Studies (from [www.prisma-statement.org](http://www.prisma-statement.org)).



### 3.4.2. Methodological Quality of Studies

The final results of the quality assessments of the eight included RCTs are shown in Table 8, which provides a summary of the risk of bias assessments. Seven studies had a low-risk of bias, meaning that they met six or more of the criteria (Brox *et al.*, 2003; Spinhoven *et al.*, 2004; Smeets *et al.*, 2006; Johnson *et al.*, 2007; Lamb *et al.*, 2010; Froholdt *et al.*, 2012; Fersum *et al.*, 2013). Thus, they were considered to be of high methodological quality.

The quality of the remaining RCT was low, as it had a high risk of bias (less than six of the criteria were met) (Rose *et al.*, 1997).

Details concerning the randomisation procedure and concealment were not adequately provided in most of the studies; and were clearly described in only five RCTs.

All eight of the RCTs had similar timing of outcome measurements between groups (eight RCTs; 100%). Six of the eight RCTs had an acceptable drop-out rate (six RCTs; 75%) and were free of selective reporting (seven RCTs; 87.5%). In the majority of the RCTs, patients and care providers were not blinded. Only two RCTs (25%) controlled for co-intervention and three RCTs (37.5%) had acceptable compliance.

**Table 8: Results of Methodological Quality Assessment of RCTs**



| No | First Author/ Year | Cochrane Risk of Bias (RoB) Appraisal |   |   |   |   |   |   |   |   |    |    |    | Risk of Bias |       |
|----|--------------------|---------------------------------------|---|---|---|---|---|---|---|---|----|----|----|--------------|-------|
|    |                    | 1                                     | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |              | Score |
| 1  | Lamb 2010          | Y                                     | ? | N | N | Y | Y | Y | Y | Y | ?  | Y  | Y  | 8            | L     |
| 2  | Fersum 2013        | Y                                     | Y | ? | Y | Y | Y | Y | ? | Y | ?  | ?  | Y  | 8            | L     |
| 3  | Brox 2003          | Y                                     | Y | N | N | N | Y | Y | Y | Y | ?  | N  | Y  | 7            | L     |
| 4  | Johnson 2007       | Y                                     | Y | N | N | N | ? | Y | Y | Y | ?  | N  | Y  | 6            | L     |
| 5  | Rose 1997          | N                                     | N | N | N | N | N | N | Y | Y | N  | N  | Y  | 3            | H     |
| 6  | Smeets 2006        | Y                                     | Y | N | N | Y | Y | Y | Y | Y | Y  | Y  | Y  | 10           | L     |
| 7  | Froholdt 2012      | Y                                     | Y | N | N | N | Y | Y | Y | Y | ?  | N  | Y  | 7            | L     |
| 8  | Spinhoven 2004     | Y                                     | ? | ? | ? | ? | Y | N | Y | Y | Y  | Y  | Y  | 7            | L     |

[1: Adequate randomisation, 2: Allocation concealment, 3: Blinding patients, 4: Blinding Providers, 5: Blinding outcome assessors, 6: drop-out rate described and acceptable, 7: Incomplete outcome data addressed (intention –to- treat analysis; ITT), 8: Free of selective reporting, 9: Similarity of baseline characteristics, 10: Co-intervention avoided or similar, 11: Compliance acceptable, 12: Timing outcome assessment similar, L = low risk of bias, H = high risk of bias, Y = Criteria achieved, N = Criteria not achieved, (?) = insufficient information, Score = total of criteria scored Y]

In general, the methodological quality of the included studies in this review was high. Only one (12.5%) of the eight included studies had a high risk of bias in its methodology.

### 3.4.3. Clinical Relevance of the Included Studies

I independently assessed the clinical relevance of the studies. The results of this assessment are shown in Table 9. From the total of eight RCTs, seven studies (87.5%) scored three or higher; thus, the majority of RCTs included in this review were considered to have moderate-to-high clinical relevance. Only four of these, however, achieved a higher score of four of the five questions (Smeets *et al.*, 2006, b; Johnson *et al.*, 2007; Lamb *et al.*, 2010; Fersum *et al.*, 2013). The majority

of the studies describe the population (seven studies; 87.5%) and intervention (seven studies; 87.5%) in an acceptable way. All the studies provided sufficient description of the clinically relevant outcome measures (Eight studies: 100%). Only four studies (50%) did not provide sufficient information for the item concerning the clinical importance of the effect size; none of the studies (eight studies; 100%) reported sufficient data to determine whether or not the likely benefits are worth the potential harms.

**Table 9: Results of the Clinical Relevance Assessment of the Eight Included RCTs**

| Assessment of Clinical Relevance |                    |          |   |   |   |   |             |
|----------------------------------|--------------------|----------|---|---|---|---|-------------|
| No                               | First Author/ Year | Criteria |   |   |   |   | Total Score |
|                                  |                    | 1        | 2 | 3 | 4 | 5 |             |
| 1                                | Lamb 2010          | Y        | Y | Y | Y | ? | 4           |
| 2                                | Fersum 2013        | Y        | Y | Y | Y | ? | 4           |
| 3                                | Brox 2003          | Y        | Y | Y | N | ? | 3           |
| 4                                | Johnson 2007       | Y        | Y | Y | Y | ? | 4           |
| 5                                | Rose 1997          | N        | N | Y | N | ? | 1           |
| 6                                | Smeets 2006        | Y        | Y | Y | Y | ? | 4           |
| 7                                | Froholdt 2012      | Y        | Y | Y | N | ? | 3           |
| 8                                | Spinhoven 2004     | Y        | Y | Y | N | ? | 3           |

[Y = Criteria achieved, N = Criteria not achieved, (?) = insufficient information, Score = total of criteria scored Y]

#### **3.4.4. Study Characteristics**

The characteristics of the included studies are listed in tables in Appendix 5. Two studies compared different types of CBT approach or components (Rose *et al.*, 1997; Spinhoven *et al.*, 2004).

Two studies compared CBT programmes to waiting list controls (Spinhoven *et al.*, 2004; Smeets *et al.*, 2006).

CBT programmes were compared with other types of treatment, such as lumbar fusion or manual therapy in four studies (Brox *et al.*, 2003; Smeets *et al.*, 2006; Froholdt *et al.*, 2012; Fersum, 2013).

Three studies assessed the effectiveness of CBT approaches, which were applied in combination with other treatments, and compared it to that of treatment alone (Smeets *et al.*, 2006; Johnson, 2007; Lamb *et al.*, 2010).

One study that assessed the effect of group therapy (Lamb *et al.*, 2010). In most studies, treatments were applied in group sessions, in which each individual group typically had between four and eight participants.

The therapists' experience in applying CBT or treating CLBP was not clearly stated in many studies. Physiotherapists in three studies attended training courses in interventions prior to the study being conducted (Lamb *et al.*, 2010; Smeets *et al.*, 2006; Fersum *et al.*, 2013). The duration of the training courses varied from 48 to 106 hours. The contents and approaches of these training courses were not sufficiently explained.

### **3.5. Data Analysis**

The qualitative narrative approach was organised using a rating system consisting of four categories of evidence, based on the quality and outcomes of the studies (van Tulder, 1999):

*Strong evidence* provided when there were multiple high-quality studies demonstrating generally consistent findings.

*Moderate evidence* provided when there was one high quality study and one or more low quality studies demonstrating generally consistent findings or when there were multiple low-quality studies providing consistent results.

*Limited or conflicting evidence* provided when there was only one high- or low-quality study, or multiple studies demonstrating inconsistent results.

*No evidence* when no studies were available.

The rating system of van Tulder (1999) was used for RCTs to determine the strength of evidence for interventions. The analysis judgment was based not only on the results of the studies but also on the strength of evidence.

**3.5.1. Subgroup Analysis**

The results of the included studies were analysed in two subgroups relating to the research questions for this review. The first subgroup analysis was on types of CBT interventions and comparators and the second subgroup analysis was on variations in CBT effectiveness.

**3.5.1.1. Type of CBT Interventions and Comparators**

There were two different types of CBT interventions: CBT alone and CBT combined. Some studies compared the effectiveness of each of these two types of interventions to a waiting list control and some studies compared it to other treatments (Table 10).

**Table 10: Subgroup Analysis of the Types of CBT Interventions and Comparators**

| Intervention (I)                                      | Reference Treatment (R) | Results  | Time to follow-up    | Strength of evidence                        |
|---|-------------------------|--|----------------------|---|
| <b>Comparing CBT to waiting list control</b>          |                         |  |                      |   |
| CBT   | Waiting list control    | <ul style="list-style-type: none"> <li>• Very little difference found between (I) and (R) for depressive symptoms.</li> <li>• (I) is more beneficial in decreasing pain intensity than (R).</li> </ul> | short-term follow-up | Strong evidence (two studies; high quality) |
| <b>Comparison between different components of CBT</b> |                         |  |                      |   |

|   |  |   |  |   |
|---|--|---|--|---|
| <b>Cognitive component of CBT</b>   | Operant component of CBT               | No significant difference between (I) and (R) in improving pain, function and depression.         | Short-term and long-term follow-up                           | Limited evidence (One study; high quality)          |
| <b>CBT compared to other type of treatments</b>                                     |  |   |  |   |
| <b>CBT</b>  | Spinal stabilisation surgery           | No beneficial effect of (R) over (I).   | Long-term follow-up  | Strong evidence (two studies; high quality)         |
| <b>CBT</b>  | Active physical treatment              | No valuable effect of (R) over (I)  | Short-term and long-term follow-up                           | limited evidence (one study; high quality)          |
| <b>CBT</b>  | Manual therapy and exercise            | (I) is more effective than ® on measures of pain, function, depression and anxiety                | Intermediate-term and long-term follow-up.                   | Limited evidence (one study; high quality)          |
| <b>CBT combined to other treatments and compared to that other treatments alone</b> |  |   |  |   |
| <b>CBT combined with physiotherapy and back education</b>                           | Physiotherapy and back education alone | Similar beneficial effect of (I) and (R) on patients' function, pain, and depressive symptoms     | Short-term and intermediate-term follow-up                   | Moderate to strong evidence (two RCT; high quality) |
| <b>CBT combined with Active Physical Therapy (APT)</b>                              | Active Physical Therapy (APT) alone    | (I) did not provide significant improvement on pain, function and depression when compared to (R) | Short-term and long-term follow-up.                          |   |
| <b>CBT combined with active management (only advice)</b>                            | Active management (only advice) alone  | (I) is more effective than (R)  | Short-term, intermediate-term and 1-year long-term follow-up | limited evidence (one RCTs; high quality)           |

***Compared to waiting list control***

Two studies, which had a low risk of bias (Smeets *et al.*, 2006; Spinhoven *et al.*, 2004), compared CBT to waiting list controls with respect to pain intensity, functional status and depressive symptoms. For this comparison, only post-treatment (short-term) data were available because after the treatment period, most studies allowed the waiting list controls to receive the intervention.

Two RCTs with a low risk of bias showed consistently positive findings concerning the effectiveness of CBT compared to a waiting list in terms of reducing pain intensity and enhancing general function in the short-term (Smeets *et al.*, 2006; Spinhoven *et al.*, 2004). However, these similar studies showed little difference between CBT and waiting list controls in depressive symptoms. Therefore, there is strong evidence (two RCTs; high quality) showing that CBT is more effective than a waiting list control for pain relief in the short term and that there is very little difference between CBT and waiting list controls in terms of depression.

### ***Comparison between different CBT components***

Two studies compared different types of CBT approaches or components with one another (Rose *et al.*, 1997; Spinhoven *et al.*, 2004). The CBT components include operant, cognitive and respondent therapy. In one high quality study, the effectiveness of adding the cognitive component (coping skill training) to the operant component of CBT had no effect on pain and function compared to the operant therapy alone for short-term and long-term follow-up (Spinhoven *et al.*, 2004). A separate RCT with a high risk of bias (Rose, 1997) evaluated four groups of patients following different programmes of combined CBT. All groups received a multimodal treatment programme: education, cognitive therapy, graded aerobic exercise, and relaxation therapy. In addition, the duration was allocated randomly as 30 or 60 hours. These programmes have been

demonstrated to be an effective means of reducing pain and improving the function of patients. However, this study found no significant differences in terms of pain and disability between group and individual therapies, or between a high- and low-intensity program. These results are less reliable because this study had a high risk of bias.

There is a limited amount of evidence (one RCT; high quality) showing that there is no significant difference between CBT and operant therapy alone in improving pain, function and depression. Additionally, there is a limited amount of low-quality evidence (one RCT; low quality) showing that there are no significant differences in terms of pain and disability between group and individual therapy or between a high- and low-intensity programmes.

- **CBT compared to other type of treatments**

Four studies with a low risk of bias (Brox *et al.*, 2003; Smeets *et al.*, 2006; Froholdt *et al.*, 2012; Fersum *et al.*, 2013) compared CBT to other types of treatment including spine stabilisation surgery (Brox *et al.*, 2003; Froholdt *et al.*, 2012), manual therapy and exercise (Fersum, 2013), and active physical treatment, including exercise therapy (Smeets *et al.*, 2006).

CBT was compared with lumbar fusion surgery and postoperative physiotherapy at short-term follow-up (Brox *et al.*, 2003) and at nine-year long-term follow-up (Froholdt *et al.*, 2012). One RCT found that both treatment groups exhibited an equally beneficial effect on disability measures at the short-term follow-up (Brox *et al.*, 2003). Meanwhile, the nine-year follow-up revealed that



there was no significant difference between CBT and lumbar fusion surgery in terms of improving back-specific functional status (Froholdt *et al.*, 2012).

These two high-quality studies (Brox *et al.*, 2003; Froholdt *et al.*, 2012) presented consistent findings showing that there is no significant difference between CBT and other treatments, such as spinal stabilisation surgery, in terms of improving functional status. There is therefore strong evidence (two RCTs; high quality) indicating that there is no beneficial effect of spinal stabilisation surgery compared to CBT (long-term follow-up).

The similarity between the effectiveness of CBT and other types of treatment is noticeable in one study that compared the effectiveness of CBT to active physical treatment, including exercise therapy, for improving pain and functional status in both the short term and long term (Smeets *et al.*, 2006). This high-quality study presented limited evidence showing that there is no valuable effect of active physical treatment compared to CBT for patients with CLBP (short-term and long-term follow-up).

Only one high-quality RCT was conducted evaluating the effectiveness of a CBT management approach, referred to as classification-based cognitive functional therapy (CB\_CFT), for manual therapy and exercise (MT\_EX) (Fersum *et al.*, 2013). This RCT used measures of pain, functional status, depression, anxiety and fear-avoidance beliefs for intermediate and long-term follow-up. CB\_CFT was more effective than MT\_EX with respect to all variables measured at the intermediate and long-term follow-up. Thus, this study presents little evidence that CBT is more effective than manual therapy and exercise in terms of measures of pain, function, depression and anxiety (intermediate and long-term follow-up).

Overall, there is a small amount of strong evidence (two RCTs; high quality) showing that other types of treatment, such as spine stabilisation surgery, are not superior to CBT. There is also limited evidence (one RCT; high quality) suggesting that other types of treatments, such as active physical treatment, are not superior to CBT. Finally, there is limited evidence (one RCT; high quality) that CBT is more effective than other types of treatment, such as manual therapy.

- **CBT combined with other treatments compared to that of other treatments alone**

The value of adding CBT to another treatment was evaluated in three studies, in which the combination of CBT and another treatment was compared to the use of the other treatment alone. All these RCTs had a low risk of bias (Smeets *et al.*, 2006; Johnson *et al.*, 2007; Lamb *et al.*, 2010). The treatments to which CBT was added included advice alone (Lamb *et al.*, 2010), an educational booklet and audio cassette (Johnson *et al.*, 2007) and exercise therapy (Smeets *et al.*, 2006).

It has also been demonstrated that a combination of CBT and other treatments, such as physiotherapy and back education or active physical treatment (APT) consisting of exercise therapy, was not superior to active physical treatment alone with respect to pain relief, functional status and depression at short-term follow-up (Johnson *et al.*, 2007; Smeets *et al.*, 2006).

One high-quality RCT revealed that treatment consisting of both CBT and active management (advice only) was more effective in improving pain, disability, mental and physical measures compared with advice alone in primary care for short-term, intermediate-term and long-term (one year) follow-up (Lamb *et al.*, 2010).

Overall, there is a small amount of strong evidence (two RCTs; high quality) indicating that there is no significant difference in outcome measures of pain, functional status and related physical and mental health measures when CBT is combined with other treatments (physiotherapy and back education, exercise therapy) compared to using those other treatments alone (short-term and long-term follow-up). There is limited evidence (one RCT; high quality) suggesting that combining CBT with advice is more effective than advice alone regarding measures of pain, function, depression and other related physical and mental health measures (short-term, intermediate and one-year long-term follow-up).

### **3.5.2. Reasons for Variation in the Effectiveness of CBT**

No qualitative studies were identified in this review. Consequently, I analysed the authors' opinions of the included studies to clarify possible reasons behind the variations in the effectiveness of CBT for CLBP.

The authors of four studies provided opinions regarding the differences in the effect sizes of CBT approaches they investigated. Illustrative quotes of the authors' opinions are presented in Table 11. Their opinions were used to explain the potential reasons behind variations in the effectiveness of CBT for CLBP patients. Regardless of the study quality, there were a number of concepts raised by these studies (Table 11).

#### **Table 11: Authors' Opinions**

| No | First author's name/year | Author's Opinion (Quote)  | Code   |
|----|--------------------------|---|--|
| 1  | Rose 1997                | <p><i>'A longer baseline period may have reduced any effect of researcher attention'</i></p> <p><i>'The use of control groups in the present study would require a significantly higher referral rate, however, and has resource implications, especially in view of the difficulties found in obtaining follow-up data'</i></p> <p><i>'The patients had long histories of pain and disability, and it is unlikely that the short interval of treatment would in and of itself be sufficient to account for all the obtained results.'</i></p>  | <p>Weak methodology design</p> <p>Participants' characteristics</p> <p>Duration of treatment</p>   |
| 2  | Spinhoven 2004           | <p><i>'Possibility that nonspecific factors of treatment (such as a clear treatment rationale, a highly structured treatment program, an emphasis on active participation by the patient himself and (self-)reward for therapeutic gains achieved) may be more influential in changing Catastrophizing and Internal Pain Control than the use of particular cognitive-behavioral treatment methods'</i></p> <p><i>'Patients did not have as much practice during the program as planned' "a higher compliance to do homework assignments may be necessary to produce differential treatment effects of pain coping and cognition'</i></p> <p><i>'It cannot be totally excluded that the absence of differential treatment effects on pain cognitions is due to the fact that patients who received group discussion unintentionally received a component of cognitive skills training'</i></p> <p><i>'the comprehensive and interdisciplinary nature of the treatment, rather than specific components that are added to it, may have been the most important treatment factor'</i></p> | <p>-Nonspecific factors</p> <p>-Compliance and adherence to the intervention programme</p> <p>-Similarity in the content and control of the intervention</p> <p>- Nature of the intervention</p>                 |
| 3  | Smeets 2006              | <p><i>'The total treatment intensity might have been a crucial factor for obtaining an additional effect'</i></p>   | <p>Treatment intensity</p>   |
| 4  | Lamb 2010                | <p><i>'Differences in results may be attributable to poor research design, but more likely they are the result of variable adherence to the principles of CBA and differences in how the programs are delivered. These include the amount of contact time, level of expertise, components included in programs and method of delivery'</i></p> <p><i>'Indications are that the important attributes of effective interventions are ensuring that the health-care professionals who deliver the interventions are able to elicit</i></p>   | <p>-Poor research design</p> <p>-Different ways of delivering treatment</p> <p>-Qualification and experience of healthcare providers</p> <p>-Capability of health care providers to deliver such a treatment</p> |

|  |  |  |  |
|--|--|--|--|
|  |  | <i>psychosocial risk factors, implementing a CB framework that results in modification of beliefs as well as behaviours'</i> |  |
|--|--|--|--|

The authors' opinions listed in Table 11 reveal a number of factors that could play a role in the overall effectiveness of CBT for patients with CLBP. Factors proposed to influence the effect size of CBT were the intensity and duration of the intervention, similarity in the contents of the intervention and the comparison control, weakness in the studies' methodology, differences in the implementation methods of CBT, the nature of the intervention, nonspecific factors (e.g. attention) and the experience and confidence of healthcare providers in applying CBT approaches. Thus, the variations in the effectiveness of CBT were not directly related to its fidelity for patients with CLBP but might have been indirectly related to the opinions of the authors (Table 11).

Although these factors may serve as explanations for the variations in the effectiveness of CBT across the included studies, they were not enough to support a conclusion as they were only the opinions of the authors and no actual reasons were provided. Thus, the reasons for the variations in the effectiveness of CBT for CLBP remain unclear. It is important to clarify why the effect of CBT varied in the different studies, as well as what the actual facilitators and barriers are to applying CBT for CLBP patients. Moreover, there is a need to determine what difficulties CLBP patients face that limit their adherence to CBT programmes. In order to answer such queries, it is important to explore the two parties to this treatment: patients and therapists.

Many potential factors related to the variations in CBT's effectiveness were identified from the authors' opinions, including the intensity and duration of the intervention, similarity in the contents of the intervention and the comparison control, weakness in the studies' methodology, differences

in the implementation methods of CBT, the nature of the intervention, nonspecific factors (e.g. attention) and the experience and confidence of the health care providers in applying CBT approaches. These were just opinions, however, and no real reasons were provided.

In summary, the review illustrated that there could be many possible reasons for variation in the effectiveness of the CBT applied in physiotherapy settings for CLBP, and they represent sensitising concepts for the remainder of this research. Sensitising concepts are the basic ideas that underpin the overall research problem (Charmaz, 2003). While they do not determine the research question, I need to be aware of them as outlines of areas of potential interest that may help to inform the development of the research (Charmaz, 2006). These concepts usually form the starting point for data analysis and serve as an analytical lens throughout the research process (Bowen, 2006)

Based on my experience as a physiotherapist and the concepts that have come out of this review, I decided that the following concepts were the sensitising concepts that need further exploration to explain the variation in the effectiveness of CBT for CLBP:

- Lack of confidence
- Lack of training
- Lack of knowledge
- Experience
- Duration and intensity of treatment
- Time
- Attitude and behaviour of the physiotherapist

- Patients' response to treatment
- Managers' support

My primary analysis was based on these sensitising concepts (please see Table 24 in section 5.3.).

### **3.6. Discussion**

This mixed-method systematic review provides the most recent evidence on the effectiveness of CBT for patients with CLBP. Eight studies were reviewed to investigate the difference in the effectiveness of CBT in supporting the management of CLBP patients. These studies were all RCTs. Quantitative analysis and statistical pooling of the data were not carried out because the review question was about the difference in the effect not the overall effect of CBT for CLBP. A qualitative analysis was therefore used to summarise the strength of the evidence, and this was then assessed based on the best synthesis of the evidence (van Tulder, 1999), taking into account the methodological quality of the studies.

The authors' opinions of the four included studies were analysed to find possible reasons for the variations in CBT's effectiveness for CLBP patients.

The results of this review are consistent with the results of a previous systematic review, which was conducted to assess whether or not CBT is an effective treatment for chronic pain (including LBP), with the exception of headache (Morley *et al.*, 1999). The results of that review support the notion that CBT is effective for chronic pain, specifically CLBP.

Sveinsdottir *et al.* (2012) conducted review, that demonstrated that CBT is effective for treating patients with chronic nonspecific LBP. The quality of the evidence of this effectiveness was strong when CBT was compared to a waiting list control; however, the quality varied when compared to other types of treatment (Sveinsdottir *et al.*, 2012). These results are also consistent with those of the current review. However, Sveinsdottir *et al.* 's review did not provide reasons for the variation in the effectiveness of CBT for CLBP

Because CBT is based on the comprehensive bio-psychosocial model of pain, including physical, affective, cognitive and behavioural components (van Geen *et al.*, 2007), it aims to reduce pain and to improve at least one of these components (Sellinger *et al.*, 2010). It is therefore necessary to judge the effectiveness of CBT based not only on the reduction observed in outcome measures of pain but also with respect to improvements in individuals' cognitive, behavioural and physical aspects. The outcome measures for these elements were used extensively in the studies included in this review, but different types of measures were used to calculate the same outcomes, leading to heterogeneity among the studies, thus preventing the reviewer from comparing them in terms of what they say about the effectiveness of CBT. It was also noticeable that work status or return to work outcomes were measured in only a few studies, although job loss and absenteeism account for the huge indirect economic costs of LBP (Goossens *et al.*, 1998; van den Hout *et al.*, 2003; Kent & Keating, 2005).

Future studies investigating the effectiveness of a treatment for CLBP should use just the most important outcome measures for LBP, including pain intensity, functional status, patients' satisfaction, quality of life and disability (Deyo *et al.*, 1998; Bombardier, 2000). This would help



reviewers of CLBP literature to compare studies with one another since their outcome measures would be homogenous.

When basing their practice on evidence from a systematic review, it is important for health care providers to ensure that the studies included in the review are clinically relevant. Thus, it is fundamental for a systematic review to describe the clinical relevance of the included studies to make it easy for clinicians to decide whether or not to use the intervention in their practice.

The majority of RCTs included in this review had moderate-to-high clinical relevance. Adequate descriptions were provided by most of the included studies concerning the population (87.5%, n=7), intervention applied (87.5%, n=7) and outcome measures (100%, n=8). However, insufficient information was provided regarding the clinical importance of the effect size in four studies (50%, n=4) and adverse effect in all studies (100%, n=8).

This highlights that all the studies failed to specify the potential disadvantages of CBT for patients with CLBP. Therefore, there is a need to clearly explain both the advantages and disadvantages associated with CBT for patients with CLBP so both patients and clinicians can make informed decisions. Moreover, sufficient clear information should be provided in future studies to cover all aspects of clinical relevance. This would help to improve clinical practice (Staal *et al.*, 2002; Heymans *et al.*, 2004).

One issue that I noticed when attempting to assess the clinical relevance of the included studies was that the assessment tool was not able to evaluate the implementation fidelity and whether the CBT interventions were consistently delivered. The second criteria question in Table 7, section 3.3.5 (i.e. Are the interventions and treatment settings described well enough so that you can

provide the same for your patients?) was not sensitive enough to assess the CBT process since, although all the studies included in this review claimed to apply CBT, it was unclear what the applied CBT actually included or whether these studies reported what they actually did.

Implementation fidelity is defined as ‘the degree to which a program is implemented as intended by the program developers’ (Hasson, 2010; Mars *et al.*, 2013; Moore *et al.*, 2015; Pérez *et al.*, 2015; Pfadenhauer *et al.*, 2015). It has been found that the implementation of complex interventions consisting of more than one component is susceptible to a high degree of inconsistency (Carroll *et al.*, 2007). Most of the studies in this review failed to report important information, such as the details regarding the CBT process and what it includes, the health care providers and the content and approaches used in the training offered to physiotherapists.

A clear and thorough description of complex interventions, such as CBT, is vital in primary studies for secondary research to effectively judge the degree of heterogeneity among the included studies and then draw appropriate conclusions with confidence (Roen *et al.*, 2006; Carroll *et al.*, 2007).

### **3.6.1. Critical Appraisal of the Existing Knowledge**

Although the majority of the included studies had high methodological quality, there were nonetheless some common flaws in the methodologies that might under-power these studies, thereby affecting the validity of the conclusions of this systematic review (Liberati, 2009). It is therefore necessary to critique the methodologies of the included studies in an effort to clarify their strengths and weaknesses.

When the risk of bias was assessed in the eight RCTs, seven studies had a low risk of bias and one had a high risk of bias. Most studies lacked sufficient information for more than one criterion. The

most common absences were related to the criteria of allocation concealment, blinding of outcome assessors and patients, control over co-intervention and compliance. The criteria that were not achieved even in high-quality studies included randomisation, the blinding of patients and therapists, outcome assessors and compliance. Bias could also be introduced when there is lack of blinding of patients and therapists, as was the case in most of the included studies, as this might influence the differences detected between treatment groups (Littlewood & May 2013).

Some of the RCTs had small sample sizes, reducing their power and explaining the lack of differential effects between treatment groups. These studies were at risk of Type 2 errors, which may restrict the generalisation of the results (Bowling, 2014; Greenhalgh, 2010). However, the sampling in some studies was adequate (Smeets *et al.*, 2006) and thus differential effects were observed, meaning that the results of those studies can be generalised (Greenhalgh, 2010).

Since most of the included studies relied on self-reported outcome measures there was a risk of self-serving bias, although observational measures can be used to mitigate this bias (Bowling, 2014).

Most studies did not find a significant difference between treatment groups. If patients were not experiencing benefits from the treatment this might explain the high dropout rate also reported by many of the studies. Furthermore, the studies did not analyse whether the characteristics of the participants who did not complete the treatment or follow-up differed from those that did, leading to a reduction in their representativeness, which, consequently, might bias the results. A high dropout rate could also have an effect on the external validity of these studies (Greenhalgh, 2010). In most studies, the experience and qualifications of health care providers were not reported. It is

recommended that future RCTs should address such limitations and accurately report the information required to fulfil all criteria of the Cochrane risk of bias assessment.

### **3.6.2. Limitations of this Review**

This systematic review has a number of limitations in its methods, which could have an impact on the conclusions drawn. The first limitation is that the authors of the included studies were not contacted to provide more information, as would be required in order fully to assess the methodological quality of studies. Contacting the authors could have changed the understanding of the quality of the studies; and this could have in turn affected the conclusions drawn by this review. Some of the studies were published several years ago, however, which could make it difficult for me to contact the authors since their contact details might have changed.

The second limitation is that, in spite of a sensitive search strategy being applied, some relevant studies may have been missed, leading to the possible introduction of publication bias. In particular, inclusion criteria restricted the search to studies published in English, and unpublished studies were excluded.

The third limitation is that I independently screened the full text of the potentially relevant records, and this could introduce selection bias. In order to minimise this risk, screening was intended to be carried out independently by more than one reviewer.

## **3.7. Conclusions**

### **3.7.1. Implications for Practice**

This systematic review reveals that CBT is effective in treating patients with CLBP for pain, functional status, and other mental and physical variables. Physiotherapists should therefore consider that management of CLBP may require the involvement of psychological assessment and treatment, such as CBT interventions.

### **3.7.2. Implications for Research**

Explanations of why, how and for what types of CLBP patients CBT may work should be considered in future studies. More consideration must be directed towards the quality of reporting of interventions in future primary studies in order to make it easy for secondary studies to compare between them appropriately. Specificity in the description of CBT interventions and their elements, as well as the CBT process, is also required in future studies so as to allow for the accurate judgment of the impact of CBT on outcomes.

This review reveals that the reasons behind variations in the effectiveness of CBT are yet to be identified, however the following sensitizing concepts were identified and will inform the design and conduct of my study:

- Lack of confidence
- Lack of training
- Lack of knowledge
- Experience

- Duration and intensity of treatment
- Time
- Attitude and behaviour of physiotherapist
- Patients' response to treatment
- Managers' support

Further research is therefore required to identify and explain the reasons for variations in CBT effectiveness.

### **3.8. Summary**

The design of the primary study is developed based on the findings of this review. It should be noted that this review was updated for the period from May 2014 to April 2019. The new literature identified are used to discuss the findings of the qualitative study (see chapter 6, section 6.2). The study design of the primary study, and the methods that were used to conduct it, will be discussed in the next chapter.

## **CHAPTER 4: METHODOLOGY AND METHODS**

The previous chapter presented the systematic literature review, which was the first stage of this thesis. This chapter describes an overview of the methodology that guided this study and the methods that I used. It consists of two sections. The first explains and justifies the research paradigm, and the ontological, epistemological, methodological and ethical components adopted for this study. A brief explanation of each component and justification of its selection is provided.

The second section describes the research methods used in this study. It starts by stating the aims, design and setting of the study. It presents the ethical review and approval of this study. It describes and justifies the methods used in sampling, data collection and analysis. Then it explains the practical application of each of these.

#### **4.1. Introduction**

The systematic literature review found a large number of quantitative studies that assessed the effectiveness of CBT delivered by physiotherapists for CLBP patients. The review found that CBT has a beneficial effect for CLBP patients when compared with waiting list control or other treatment (e.g., usual care, manual therapy, or spinal stabilisation surgery) across different studies. The evidence of the effectiveness of CBT varied from weak to strong evidence amongst the different studies. For example, a recent Cochrane review of psychological therapies for chronic pain, such as low back pain, suggested that CBT has moderate effectiveness in pain and pain catastrophising (Williams *et al.*, 2013), whereas a further review highlighted CBT as efficient in helping people in the management of chronic low back pain (Sveinsdottir *et al.*, 2012). Despite the significant wealth of literature about the use of CBT as part of the management of patients with CLBP, little is known about how CBT is applied in physiotherapy settings, or whether different approaches to applying CBT influence the extent to which they enable CLBP patients to self-manage their pain. There were no qualitative studies explaining how physiotherapists make the decision to use CBT for CLBP. Also, little is known about the reasons for variation in CBT effectiveness across different studies. It was also found that the majority of studies conducted in physiotherapy were of a quantitative study design, whereas no qualitative studies were identified.

The interest of this research is directed towards generating an explanation and understanding of why, when and how some physiotherapists make a decision to apply CBT for CLBP patients, whereas others do not. Exploring CLBP patients', physiotherapists' and managers' perceptions about CBT therefore seems to be important in regards to generating a robust explanatory theory for the clinical application of CBT as part of the physiotherapeutic management of CLBP. This means that this study will explore the clinical decisions made by physiotherapists, with different levels of CBT training, so as to develop an understanding of the circumstances through which CBT is thought to be an effective and feasible treatment option. The study will seek patients' perspectives so as to identify the key elements that enable patients to apply what they have learned in CBT. The study will also include physiotherapy service managers in an effort to understand any wider contextual issues that have an impact on the use of CBT in the physiotherapeutic management of CLBP. Such explanations will help further to inform RCTs about the effectiveness of CBT for CLBP in physiotherapy.

As mentioned earlier in the thesis, CLBP is a multidimensional condition involving biological, psychological, social and environmental dimensions, and CBT is an umbrella term used to describe cognitive and behavioural approaches and techniques that are applied in different combinations, depending on the clinical decisions made by the physiotherapists involved. Thus, an in-depth understanding of the perspectives of patients, physiotherapists and physiotherapy services managers about a complex intervention, such as CBT, for a complex condition, such as CLBP, is deemed necessary. This entails a qualitative study.



The following section provides a justification of the research paradigm and its ontological, epistemological, methodological and ethical components.

## **SECTION 1: The Research Paradigm and its Components**

This section discusses different research paradigms that are commonly used in health services' research. This discussion is followed by the exploration of the various components of the research paradigm, including ontology, epistemology, methodology and ethics. The section also explains and justifies, for each component, the selection of the approach suitable for this study.

### **4.2. Research Paradigm**

Research paradigms are sets of beliefs and practices that are shared by communities of researchers (Glaser & Strauss, 1967; Bunniss & Kelly, 2010). These sets regulate inquiry within disciplines (Denzin & Lincoln, 2003; Bunniss & Kelly, 2010). They reflect the worldview of the researcher in that the researcher views the world through these paradigms. The two research paradigms that are commonly reported in health services' research are positivism and interpretivism (Ritchie & Lewis 2003; Bryman, 2012). These two paradigms are briefly explained in the following sub-headings, which also provide a justification for the paradigm adopted for this study.

#### **4.2.1. Positivism**

The assumption in this paradigm is that events in the world can be understood objectively and independent of the researcher's perspectives (Bunniss & Kelly, 2010; Bryman, 2012). This

paradigm aligns with quantitative research (Bryman, 2012), in which researchers use questionnaires or conduct experiments to test hypotheses statistically (Ritchie & Lewis, 2003; Bryman, 2012). Positivism avoids collecting data in natural contexts so as to avoid introducing more variables and because this paradigm undervalues the experience of individuals since it assumes an objective single reality for any phenomena (Bunniss & Kelly, 2010).

#### **4.2.2. Interpretivism**

This research paradigm is known as a constructivist as well as a naturalistic paradigm. It is defined by Snape and Spencer (2003) as a paradigm that is characterised as “displaying multiple constructed realities through the shared investigation by the researchers and participants of meaning and explanations” (Snape & Spencer, 2003; p.12). The assumption in this paradigm, therefore, is that reality is subjective, changing and shared by individuals (Snape & Spencer, 2003; Williman, 2005). This means that the researchers in this paradigm do not believe in the existence of an ultimate truth (Bunniss & Kelly, 2010). The purpose in the studies conducted within this paradigm, which are frequently qualitative research, is focused on understanding and discovering the meaning of the individuals’ reality (Guba & Lincoln, 1994; Appleton & King, 1997; Weaver & Olson, 2006). This understanding, and the generation of the underlying meaning of the investigated phenomena, is constructed through social interaction between the researcher and the research participants in natural settings (Guba & Lincoln, 1994; Coffey & Atkinson, 1996). It is clear from the above literature that participants’ accounts are valuable in this paradigm and that the researcher’s role and knowledge are acknowledged (Guba & Lincoln, 1994; Snape & Spencer, 2003; Bunniss & Kelly, 2010).

### **4.2.3. Justification of the Adopted Paradigm**

Because of the limitations recognised in the literature in respect to the use of the positivist paradigm for health care research (Bunniss & Kelly, 2010; Bryman, 2012), this paradigm was not considered for this study. This was for many reasons. Firstly, the purpose of research carried out within this paradigm is to prove a theory to establish a single truth. The purpose of my study, in contrast, was to generate understanding and explanation about the use of CBT for CLBP in a physiotherapy context. Thus, exploration of the perceptions and perspectives of different stakeholders (CLBP patients, physiotherapists treating CLBP patients and those managing physiotherapy services for CLBP patients) is a requirement to achieve that purpose. Those different stakeholders may give different meanings to their reality through their different accounts. Secondly, as mentioned earlier, the research within this paradigm is aligned with quantitative research in which hypotheses are statistically tested and in which that studied is considered to exist independent of the researchers. In contrast, I am a physiotherapist by background and as a researcher; I was not separated from the research area and could share similar accounts as the research participants (physiotherapist participants). Also, my experience, knowledge, feelings and thoughts may influence the data collection and interpretation of findings. I therefore acknowledge that it is difficult for me to remain objective and apart from my project topic and research participants. Thirdly, positivists are recognised to use only objective measurement such as questionnaires, or experiments, in their research and they avoid data gathering in natural settings. In this research, however, I am aiming to explore the subjective perceptions and perspectives of different participants to understand their lived experiences about the use of CBT. I want to know, for example, when and why physiotherapists decide to apply CBT for CLBP, and how they make

this decision. Also, what the key elements are that enable patients to apply what they have learned from CBT to self-manage their pain. Moreover, I want to understand what the contextual issues are that affect the use of CBT in the physiotherapeutic management of CLBP. Such questions cannot be answered using objective measurements because these cannot explain the subjective experiences of participants, which are commonly influenced by social, psychological, cultural and economic dimensions. Besides, the real world of physiotherapy practice is not a controlled environment or homogenous in nature, as are experimental groups (Helders, 2004). Furthermore, I believe that it is also an environment affected by the surrounding social, psychological, cultural, political and economic dimensions, and that these need also to be considered when investigating a phenomenon. These dimensions are neglected by many positivist-inclined researchers in physiotherapy, leading to an incomplete picture of the phenomenon being investigated. This is demonstrated by Jones, (2006, p.3) who stated: “a close look at many of our own RCTs reveals an incomplete picture where the impact the health problem and the physiotherapy intervention had on research subjects’ lives is not fully elucidated, leaving those patients who failed to respond as mere statistics, outliers and unheard voices” (Jones *et al.*, 2006). For all these reasons, the positivist paradigm was inappropriate for my study.

For the purpose of this study, the interpretivist/constructivist paradigm was adopted and considered the most suitable one, for several reasons. Firstly, using this paradigm enables me to capture participants’ subjective perceptions and perspectives about the use of CBT for CLBP in a physiotherapy context. Secondly, it helps me to generate an in-depth understanding of different patients living with different problems and life contexts. This is because the development and persistence of a complex condition such as LBP are influenced by different dimensions, including

biological, psychological and social dimensions. Finally, it requires the researcher to interact directly with participants in the context of the research area. My understanding as a researcher is therefore acknowledged, as well as the participants' understanding. Eliminating bias is not the intention of research conducted within this paradigm since it assumes that research can never be bias free (Bunniss & Kelly, 2010). The extent to which my experience, thoughts and opinions might influence the findings is observed reflexively, however, to ensure that findings are grounded in data and not my pre-conceived knowledge. Reflexivity is a process by which the researcher, as far as possible, shares with the audience the procedures that have led to the conclusions (Seale, 1999, p. 158).

### **4.3. Components of Research Paradigms**

The various paradigms are characterised by ontological, epistemological, methodological and ethical differences in their approaches to the conduct of research, and in their contribution towards disciplinary knowledge constructions (Denzin & Lincoln, 2003; Bunniss & Kelly, 2010). These four components define the research paradigm and philosophical structure that provide the basis for this study. The following sub-headings discuss these four components in more detail. Table 12 compares the differences between paradigms.

#### **4.3.1. Ontology**

This refers to the underlying beliefs of the researcher about the nature of reality and what can be known about. The ontology needs to be fitted well with the research purpose. This study aims to develop a robust theory to explain the clinical application of CBT for CLBP in physiotherapy

settings. Exploring different stakeholders' perceptions and perspectives can generate an understanding of the use of CBT in physiotherapy contexts. To achieve this purpose, and to integrate different participants, but also shared experiences and representations, this study adopts a relativist ontology, which is subjective as the reality is socially constructed. and acknowledges the differences in people's representations (Snape and Spencer, 2003). It also recognises that people's representations are socially constructed; thus, they are influenced by their social and cultural contexts.

#### 4.3.2. Epistemology

This is concerned with beliefs about the nature of knowledge. The theoretical framework of a study is generated through the study's epistemology, which demonstrates how a researcher knows about the world in general and the research participants in particular. I adopted the interpretivist approach because this study aims to develop a robust theory to explain the use of CBT for CLBP in physiotherapy settings. Focusing on exploring different stakeholders' perceptions and perspectives can generate an understanding of the use of CBT in a physiotherapy context.

**Table 12: Research paradigm assumptions (Killam 2013; Creswell 2017)**

| Paradigm       | Ontology   | Epistemology  | Methodology  |
|----------------|--|---|--------------|
| Positivism     | There is a single reality or truth   | Reality can be measured and hence the focus is on reliable and valid tools to obtain that | Quantitative |
| Constructivist | There is no single reality or truth. Reality is created by individuals in groups | Reality needs to be interpreted. It is used to discover the underlying                    | Qualitative  |

### 4.3.3. Methodology

The methodology of a study encompasses the general strategies or approaches, as well as the specific methods, used to conduct the study, which build on the epistemological and ontological foundations of the research. A qualitative methodology was adopted within the current study since this allows for comprehension of a social issue alongside the personal encounters, viewpoints and sentiments of the subjects (Creswell, 2013). At an early stage of this research, and during the period when the study methodology and design were being developed, I was able to attend a five-day course in qualitative research at the University of Oxford. From that course, and after discussion with my supervisors, I was able to reach a decision regarding the approach that fitted my research aim. Considering that this study wanted to generate an explanatory theory to explain how, when and why physiotherapists make a decision to use CBT in the management for CLBP, the grounded theory approach was considered to be the most appropriate; however, the method of ethnography was also evaluated for implementation within this research. The reasons behind this approach not being chosen are discussed below.

#### 4.3.3.1 Ethnography

The term ethnography literally means “writing about groups of people” (Creswell, 2005). Ethnographers learn from studying a group sharing a culture at a single site (i.e. a group of people who share *beliefs, behaviours and language*, and who interact on a regular basis). Ethnographic researchers look for shared patterns of behaviour, beliefs and language that the culture-sharing

group adopt over time. A *shared pattern* is a common social interaction that stabilises as tacit rules and expectations within the group (Creswell, 2017).

Thus, this approach was not suitable for the current research because there is diversity in application of CBT and because I want to explore the reasoning behind that diversity; identifying a shared pattern is not the focus of the research. Additionally, it was not fit for this research because there may be many different beliefs among physiotherapists as to whether, when and how to use CBT. I did not want to generate knowledge about asking them to adopt an extra skill set in terms of professional culture, rather it aims to explore their opinions to generate an explanation and understanding of when and why and how some physiotherapists use CBT for CLBP, whereas others do not. Thus, when considering all of the above, we can see that ethnography was not appropriate for this study.

#### **4.3.3.2 Grounded Theory**

Grounded theory is an inductive strategy which adopts a systematic process to develop theory using data as a starting point (Strauss & Corbin, 1990). Grounded theory is centred on incidences (event/situations) rather than individuals, and it attempts to pinpoint the key concern of the subjects in the incidences (i.e., what the incidence indicates for them, what concerns them, how they tackle them). This approach also evaluates the process around the field at hand, and aids in constructing theoretical frameworks on the grounds of data collected (Charmaz, 2000). Grounded theory was chosen as the most appropriate method for this research since it centres on the social processes in



the phenomenon under investigation. It was felt that this was suited to creating a theoretical explanation of how, when and why physiotherapists use CBT in the physiotherapeutic management of CLBP.

Sociologists Barney Glaser and Anselm Strauss created grounded theory whilst studying patients in critical conditions. That study was published in their book 1965 book *Awareness of Dying*, and they then formally expounded grounded theory in their subsequent (1967) book *The Discovery of Grounded Theory*. They created the approach of constant comparison as a general method for either quantitative or qualitative data (Charmaz, 2000). Saying this, the data utilised for this approach can never be numerical (it has to be text-based), thus excluding statistics, and so it is generally only deemed suitable for qualitative research (Charmaz, 2000). The two sociologists eventually ended up going in different directions. The division of the theory becoming evident once Strauss published *Qualitative Analysis for Social Scientists* in 1987, and *Basics of Qualitative Research: Grounded Theory Procedures and Techniques* published three years later alongside Juliet Corbin. Meanwhile, Glaser published his work *Basics of Grounded Theory Analysis: Emergence vs. Forcing* in 1992, each chapter of which replied to Strauss's works, highlighting the variations between the two editions of the original theory. Glaser argued that anything penned by Strauss was not true grounded theory and believed in the emergence and induction of theory, emphasising the importance of a researcher not doing a literature review before their research so as to avoid any preconceptions encroaching on the theory. Strauss, on the other hand, stressed a validating and systematic method, promoting a preliminary literature review to enhance the sensitivity of theories (Strauss & Corbin, 1998). Strauss believed the paradigm method was the most advantageous approach when it comes to allowing the theory generation process to unfold

systematically; meanwhile, Glaser dubbed Strauss's approach as 'prescriptive', claiming it could lead to the forcing of categories and theories instead of just allowing them to arise naturally.

Another version of grounded theory is that of Charmaz (2003; 2006) and Annells (1996), who are social constructivists and thus put forward the notion of the constructivist grounded theory method, which "...takes a reflexive stance on modes of knowing and representing studied life" (Charmaz, 2005, p. 509). This method recognises the implications and impacts of the researchers' previous views, curiosities, contexts and interactions with study subjects, "concrete field experiences, and modes of generating and recording empirical material" (Charmaz, 2005, p. 509). Charmaz further pinpoints Glaser & Strauss as being 'objectivist grounded theorists', relying on there only being one single reality (Charmaz, 2000). She goes on to claim that constructivists advocate that realities can be reconstructed and constructed (as explained above); indeed, according to her, a constructivist perspective is different to that of an objectivist in the sense that constructivists want to investigate subjects' personal constructed realities, and so do not aim to be able to generalise their findings across a larger population. Constructivists do not acknowledge conceptual diagrams as a requirement; rather, Charmaz (2000) states these can impede an accurate representation of a situation or a procedure. This perspective also contends that conditional matrices and axial coding are pointless (Strauss & Corbin, 1998), considering them too strict. Also, constructivist grounded theory acknowledges the researchers to be authors and coproducers, being essential to the construction of shared reality alongside subjects (Charmaz, 2006). Charmaz also continued to believe that funding body/scientific organisations pressure researchers to undertake objectivist studies.

Charmaz (2000) describes grounded theory as being flexible for any epistemological position; it also gives researchers values, rules and strategies to go off, instead of formulae, methodological stipulations and a prescriptive load (Charmaz, 2006). She claims that the grounded theory approach equips researchers with a better ‘set of tools’ that can be utilised to tell “stories about people, social processes and situations” (Charmaz, 2000, p. 522).

This approach was thought to be appropriate for the current research on the basis that it helps in expanding a theory based on the information found and is grown by the consistent comparison of any deviations and congruences between the separate viewpoints of the subjects. I chose the constructivist grounded theory (Charmaz, 2006) from among the various grounded theory methods due to its alignment to the present study’s objectives (to generate a theory that provides an explanation and understanding of how, when and why some physiotherapists make a decision to apply CBT for CLBP patients, whereas others do not). It is malleable, and urges the researcher to implement it as a material to build a mutual reality, as well as knowledge concerning the idea of interest; indeed, the constructivist grounded theory methodology does not require the researcher to set out on data collection without awareness of previously conducted studies, unlike a lot of other grounded theory methods (Charmaz, 2006). Notably, starting research without any previous knowledge or attraction was impossible in my case since I was already conscious of the topic, and my curiosity in it had grown over an extended period of time; further, the constructivist grounded theory approach recognises the impact of the researcher, and acknowledges them to be the coproducer of the study. Overall, the method is flexible, and recognises that individuals’ personal, subjective encounters mould their realities (Charmaz, 2006).

#### **4.3.3.3. Grounded Theory Methods**

There is no one singular technique for data collection recommended by grounded theory; saying this, interview transcripts are acknowledged to be the most popular kind of data (Ryan & Bernard, 2000). Within the data collection process in grounded theory studies, analysis occurs in parallel with data collection (Corbin & Strauss, 2008). Notably, there are a great many stages that are recommended to be implemented, which are otherwise known as ‘the tools of grounded theory’; some of these include creating memos, coding, constant comparison, theoretical saturation and theoretical sampling (Charmaz, 2006; Bryman, 2008). In preparation for the analysis of the data, I was able to attend a grounded theory workshop at Lancaster University presented by Professor Kathy Charmaz. I learned a lot from this workshop since my confusion, doubts, and all my questions around data analysis, were answered.

#### ***Coding***

Coding is a tool of grounded theory that can be defined as “...categorising segments of data with a short name that simultaneously summarises and accounts for each piece of data” (Charmaz, 2006, p. 43); coding is also the first stage in pulling away from solid statements within the data, instead leaning more towards forming analytical interpretations. In the same vein, Charmaz (2006) categorises three kinds of coding: initial coding (the highlighting of any important words/phrases), focused coding and theoretical coding. The former necessitates a disintegration of the information, and commences once the first data set is obtained; further, each line of the transcript is named and read to pinpoint any occurrences within the information with the aid of detailed classifications and

words. It is essential that the words employed are very directly linked to and mirror the collected information (Charmaz, 2006); indeed, frequently, the words that are employed by the subjects can be utilised as a code, and this is dubbed ‘in vivo’ coding. After this, comparable codes are grouped into sets and any additional data collection-related decisions from that point are made on the grounds of building sets and ideas until theoretical saturation is obtained. This will be discussed in the following paragraphs.

The following coding step is that of focused coding, which intends to create more straightforward, specific codes, rather than those built upon the initial coding. Focused coding can generally be defined as the process of “...using the most significant and/or frequent earlier codes to shift through large amounts of data” (Charmaz, 2006, p. 57). The categories are expanded and compared with other categories, and focused codes are first developed by comparing data with data, before then comparing the data with codes in order to improve the focused codes and build upon their features. After the initial and focused code processes, the theoretical coding process commences. This is an advanced coding level comprising of analysing the focused codes and determining the interactions between the categories and the ideas (Charmaz, 2006). Theoretical coding also aids in arranging and mixing focused codes into a rational, intelligible, complete analytical narrative, or, in other words, a theory of the phenomenon being analysed. In the same vein, a core variable/category should arise regularly within the data, detailing the majority of the discrepancies within the investigation and connecting with other sets. It also permits maximum disparity for data evaluation, which has consequences for formal/substantive theory and could help the development of theory (Strauss, 1987). Having said this, Charmaz (2006) does not allocate as much importance to the pinpointing of the core category, instead urging researchers to demonstrate the interactions

and links between a range of sets, and recommending that, rather than “making explicit theoretical propositions” (Charmaz, 2006, p. 148), the researcher should integrate them into the plot. Notably, the result of a constructivist grounded theory study is a conceptual framework that details the occurrence under evaluation.

### **Constant Comparison**

The data collected is then analysed using the constant comparison approach—a tool of grounded theory. Constant comparison is a process of continuously ensuring throughout the entirety of the data analysis and collection that the collected data is always being compared to previously collected data so as to pinpoint any correlations and discrepancies within the ideas and categories, which are then expanded via coding. This comparison enhances the conceptual understanding of the categories by identifying their analytical features before interrogating these features (Charmaz, 2006).

### **Memo writing**

An additional useful tool within the analytical process is that of theoretical memos. These are the notes that the researcher writes up during the process of data analysis and collection. Memos are known to aid the researcher in logging any concepts or ideas as they arise, thus mirroring the researcher’s thoughts with the information (McCann & Clark, 2003). This is an inductive process of personifying the information, but also a deductive one during the process of creating connections between categories, conceptual labels and subcategories (McCann & Clark, 2003).

Memos are normally documented as diagrams, notes, or generally any format that fits around the author (Charmaz, 2006). They are noted in a casual, non-professional style as they are solely for the private use of the author, and they may additionally aid the researcher in describing every category/code, as well as in comparing data, data with codes, codes, codes with categories and categories. They may also assist in providing empirical evidence to back up descriptions of the category as well as the analytical statements connected to it, putting forward presumptions to explore the area further and to pinpoint any elements of analysis that have not been explored, as well as to cross-examine a category/code (Charmaz, 2006).

### **Theoretical Sampling and Theoretical Saturation**

Theoretical sampling can be defined as “the process of data collection for generating theory whereby the analyst jointly collects, codes, and analyses his data and decides what data to collect next and where to find them in order to develop his theory as it emerges” (Glaser & Strauss, 1967, p. 45). In addition, theoretical sampling helps to enhance the study by identifying the related features of the categories, permitting the substance to transfer to analysis, raising their exactness, grounding inferences within the data, creating more generalisable and conceptual analyses, upping the frugality of theoretical statements, and explaining the rational connection between/amongst categories (Charmaz, 2006). The reason behind collecting data on the grounds of emerging concepts is to create more chances to pinpoint deviances between ideas and to “...densify the categories in terms of their properties and dimensions” (Strauss & Corbin, 1998, p. 201). This means that it is not possible to identify the suitable number of subjects to be sampled at the outset

of a study. Instead, new subjects can continue to be included until a united, complete and descriptive conceptual framework to clarify the issue is created (Charmaz, 2006). The inclusion of more new subjects ceases when there is no novel data, or any data to improve the category further; in other words, when all categories are compressed, and the interactions between categories are established (Strauss & Corbin, 1990). This is known as the stage of theoretical saturation: "...when gathering, fresh data no longer sparks new theoretical insights, nor reveals new properties of... core theoretical strategies" (Charmaz, 2006, p. 113).

#### **4.3.4. Ethics: Rigour and Trustworthiness of the Study**

It is essential for a researcher to abide by any legal and ethical responsibilities they bear when it comes to conducting a proficient, safe and suitable study, especially within healthcare research (McCallin, 2003). As noted by Charmaz (2006), grounded theory is acknowledged as possessing its own select principles regarding credibility evaluation, stating that a constructivist grounded theory should be:

- original—i.e., that it should put forward a novel perspective on the conceptual rendering of data, as well as on the how the theory grows, contests, or improves present practices, thoughts and ideas;
- credible—i.e., that it should showcase personal understanding with regard to the topic/context, use systematic comparisons and provide sufficient foundation for the statements made by the researcher;



- resonant—i.e., that it should showcase the well-roundedness of the explored experience, exposing any misconceptions within the topic and putting forward a more detailed perspective on the worlds and personal lives of the subjects compared to the idea of interest;
- useful—i.e., that it should offer analyses that individuals can utilise within their daily lives, putting forward broad procedures and their implicit effects, pinpointing fields of additional study, as well as adding to the knowledge within, and enhancement of, society.

Although Charmaz (2006) provided a brief description of the criteria mentioned above, I found her account too unclear for me to utilise practically as a junior researcher learning the qualitative research process. I therefore preferred to use the criteria of trustworthiness established by Lincoln & Guba (1985) and Denzin & Lincoln (2005), since I found their language easier to understand, and the examples provided increased my confidence in applying their approach to evaluate my study.

Based on the principles put forward by Lincoln & Guba (1985)—comprising of transferability, credibility, confirmability and dependability (as demonstrated within Figure 3 and generally summed up in Table 13)—I believe that this study is able to demonstrate rigour and transparency.

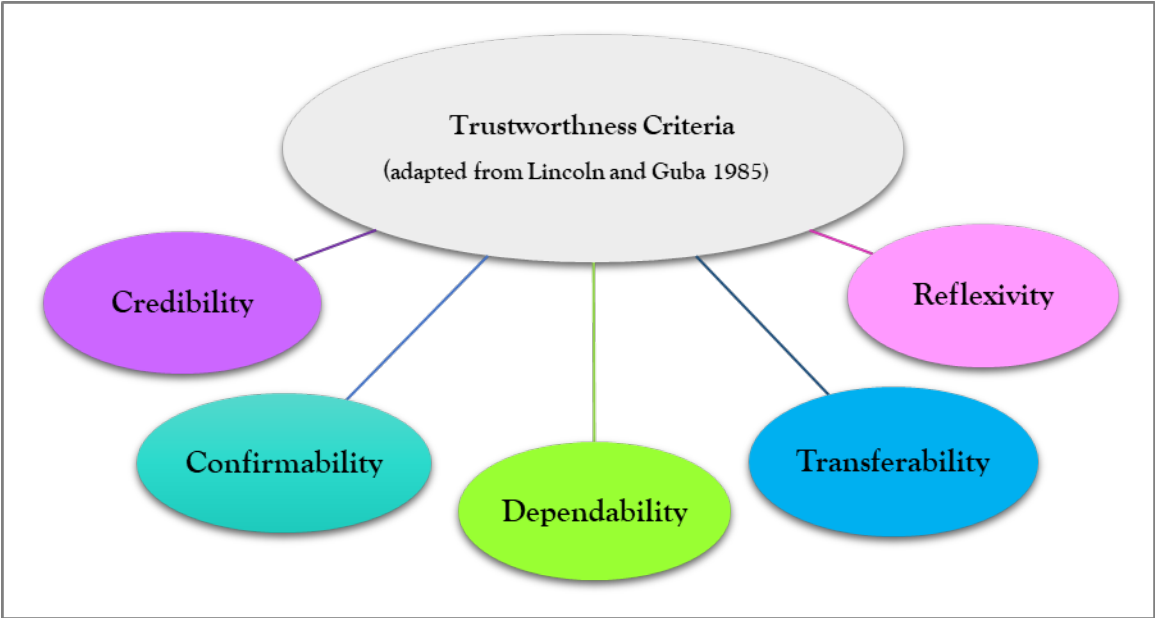


Figure 3: Criteria of trustworthiness

**Table 13: Lincoln and Guba’s (1985) evaluation criteria with brief definitions**

| <b>Evaluative Criteria</b> | <b>Brief definition</b>  | <b>Techniques to achieve criteria</b>   |
|----------------------------|--|---|
| <b>Credibility</b>         | Confidence in the 'truth' of the findings.   | <ul style="list-style-type: none"> <li>▪ Prolonged Engagement</li> <li>▪ Persistent Observation</li> <li>▪ Triangulation</li> <li>▪ Peer debriefing</li> <li>▪ Negative case analysis</li> <li>▪ Referential adequacy</li> <li>▪ Member-checking</li> </ul> |
| <b>Transferability</b>     | Showing that the findings have applicability in other contexts.  | <ul style="list-style-type: none"> <li>▪ Thick description</li> </ul>   |
| <b>Dependability</b>       | Showing that the findings are consistent and could be repeated.  | <ul style="list-style-type: none"> <li>▪ Inquiry audit</li> </ul>   |
| <b>Confirmability</b>      | A degree of neutrality, or the extent to which the findings of a study are shaped by the respondents and not researcher bias, motivation, or interest. | <ul style="list-style-type: none"> <li>▪ Confirmability audit</li> <li>▪ audit trail</li> <li>▪ Reflexivity</li> </ul>  |

#### **4.3.4.1 Credibility**

Credibility—which concerns the ‘truth value’ of the findings (Lincoln & Guba, 1985)—can be likened to internal validity within quantitative research. Qualitative researchers can implement a range of approaches (e.g., member-checking, negative case analysis, peer debriefing and triangulation) to achieve the credibility of their study data. All of the above techniques were utilised within this current study to achieve the credibility of the findings.

The first approach that we will discuss here is member checking, which is essentially interaction with subjects within the study to validate the researchers' take on the collected information; it additionally aids researchers in ensuring they have applied, which can be defined as: "...able to support that [their] reconstructions are recognisable to audience members as adequate representations of their own (and multiple) realities is essential that they be given the opportunity to react to them" (Lincoln & Guba, 1985, p. 314). Member checking can be carried out in either an informal manner—e.g., unprincipled colleague/research supervisor/peer deliberations, discussions, etc.—or a formal manner—e.g., within formal meetings/presentations, etc. Notably, the researcher does not necessarily have to apply any critique they receive; they are simply obligated to consider it. In order to clarify the emergent theory further, Charmaz (2006) also recommends member checking through asking the subjects questions. This could be viewed as a kind of triangulation, which is another approach to showcase credibility. Member checking was implemented within the current study in order to enhance the credibility of the research findings and, although the researcher was not in a position to return to every subject separately and ask for their personal criticism on the research, member checking was undertaken with each subject, both after and during every interview, by summarising, emphasising and reflecting to subjects what they said so as to improve the accuracy of data and to ensure that it is representative of their accounts. Categories and coding were explored, compared and contrasted each time new information was found.

The second technique to ensure credibility is triangulation, which is the utilisation of a scope of materials/sources to collect data, using varying researchers and techniques. The implementation of triangulation helps the researcher to explore the phenomenon from a number of viewpoints.

Other methods (e.g., theoretical sampling, where subjects are chosen on the grounds of growing the final theory and categories) also serve the same purpose. Triangulation limits personal and methodological biases. For this study, patients, physiotherapists and managers were interviewed as a way of embedding triangulation within the data collection.

The third method for enhancing credibility is that of negative case analysis (Lincoln & Guba, 1985). This identifies cases that do not back/fit the patterns found within the data collected. Such identification helps to refine the categories and codes and thus adds to the fruitfulness of the developing theory (Denzin & Lincoln, 2005; Charmaz, 2006). I attempted to identify negative cases within the data before comparing them with other subjects in terms of the data collected and the subjects' individual characters, and this helped in explaining and comparing any deviations between the final theory, the data itself and the categories.

Another method to achieve and improve credibility that has been implemented within this study is that of peer debriefing. Peer debriefing helps supervisors, advisors and colleagues in asking analytical questions concerning their findings and methods, which can later add to the growth and refinement of the generated theory and the categories.

#### **4.3.4.2 Transferability**

A substitute for external validity, as understood in quantitative research, is transferability, which is the level to which the study findings are generalisable (or, for the sake of the term, transferable) to comparable circumstances. Within qualitative research, transferability requires the researcher to identify the context and findings clearly so as to allow other researchers to utilise those results within other situations (Lincoln & Guba, 1985). Strauss & Corbin (1990) also state that further

study on the basis of transferring a theory grown within one specific setting/subject grouping to a different setting/subject grouping leads to enhancement of the theoretical framework.

#### **4.3.4.3 Dependability**

Dependability is acknowledged as being similar to reliability within quantitative research, and can be defined as whether the study can be successfully replicated (and lead to the same findings). Qualitative research presumes and acknowledges the presence of a number of realities that are subject to change when considering the specific circumstances/contexts/settings in which they come about; thus, complete study replication is difficult to achieve. This difficulty can be counterbalanced, however, via the use of theoretical sampling, which provides consistent comparison and an accurate description of each stage of the study, as well as of any decisions made by the researcher during the process of the investigation, thereby helping the reader grasp the full process. In the same vein, Lincoln & Guba (1985) advise that, in order for a research to be dependable, it must be credible, and vice versa.

#### **4.3.4.4 Confirmability**

Confirmability can be thought of as similar to objectivity within quantitative research, as it refers to the level at which the research findings mirror not the researchers' internal biases, opinions and preconceptions, but the subjects' opinions. It is thus advised that any measures implemented to achieve transferability, credibility and dependability also aid in achieving confirmability (Lincoln & Guba, 1985). Furthermore, confirmability can be obtained by simply stating the processes utilised within the duration of the study, such as category formation, data collection and coding, since this can help the reader to form an accurate opinion of the findings (Lincoln & Guba, 1985;

Strauss & Corbin, 1998). This study has attempted to implement a range of strategies (e.g., writing memos, field notes and reflective journals) in order to maintain an audit trail. In addition, any decisions made over the course of the study process had already been deliberated amongst the research supervisors, and consequently the meetings were summarised and documented.

#### **4.3.4.5 Reflexivity**

The researcher in qualitative research is considered to be the data collection and analysis tool; therefore reflexivity, which is clarification of the researcher's personal background and characteristics, should be established (Pope & Mays, 2008). These characteristics and background experience (e.g., age, gender, occupation or nationality) of the researcher may affect the data collected either positively or negatively. For example, a principal researcher who is a female physiotherapist and not from UK may allow the participants to share experiences that may not be shared with a male physiotherapist or UK-based physiotherapists. On the other hand, this may have an opposite effect, as participants may not tell the researcher their experiences because of the researcher's personal characteristics.

With this in mind, I sought to avoid over-interpretation of gathered data and sought to be neutral during the interviewing process, in order to ensure that my background did not influence the interviews or affect the participants' responses. This was intended to encourage the participants to talk freely about their experiences, feelings and behaviours, whether negative or positive, without any obstacles (Bowling, 2014). I practised the interview with peers and piloted both the interview process and topic guide to improve the skills required for interviewing.

## **METHODS**

The following sections present and justify the various methods used for conducting this study.

### **4.4. Aim**

This study aims to generate an explanatory theory that provides explanation and understanding of when, why and how some physiotherapists make the decision to apply CBT for CLBP patients, whereas others do not.

### **4.5. Design**

The study was conducted using a constructive grounded theory methodology, as proposed by Charmaz (2006). A detailed account of the approach, and reasons for selecting this approach was presented in section one of this chapter (see section 4.2). The study used qualitative methods of data collection; specifically individual interviews using a semi-structured interview guide and constructive grounded theory analysis techniques. The justifications of why I choose these methods are explained in the following sections.

### **4.6. Setting**

The study was conducted in a community musculoskeletal service commissioned to provide outpatient physiotherapy services to patients in Yorkshire, in the North of England.



## **4.7. Ethical Approval and Ethical Considerations**

North of Scotland Research Ethics Committee reviewed the study and granted NHS ethical approval (Appendix 6). The Research Department in Sheffield Teaching Hospital (STH) also reviewed the study. The University of Sheffield also approved the study (Appendix 7). An NHS Permission Letter giving R&D Authorisation for this study was granted (Appendix 8).

Two months into the process of recruiting participants, however, it was recognised that the initial recruitment was slow. An amendment to the original application for NHS ethical approval was therefore applied to change the recruitment strategies. The NHS ethical approval of the amendment was obtained (Appendix 9). The revised strategy (see section 4.7) for recruitment was successful.

### **4.7.1. Confidentiality**

The principal researcher completed General Clinical Practice (GCP) training in 2013 and is familiar with data protection and confidentiality issues related to the research. The participants were assured that any data reported by them would be confidential to the research team, and that their data and their names would be coded and anonymised throughout the study, thereby maintaining their privacy by keeping their identity confidential. All electronic data collected during the study was saved in a secure laptop with a complex password. In addition, the signed informed consent, as well as any other papers containing important information were kept in a secured locker in the researcher's office within the School of Health and Related Research (ScHARR) at the University of Sheffield.

#### **4.7.2. Risks**

The qualitative studies conducted for this research pertained no disadvantages or risks to participants. The data collection was carried out in a place where the safety of participants and the researcher was assured, namely the community musculoskeletal-based services commissioned to provide outpatient physiotherapy services to patients in Yorkshire.

#### **4.8 Sampling**

As mentioned earlier, this study aimed to explore the variety of CLBP patients', physiotherapists' and physiotherapy service managers' perceptions about CBT. For this purpose, I used a theoretical sampling approach, which was defined in the previous chapter (section 3.3). Initially, I used purposive sampling based on predetermined criteria (age or gender) to recruit those participants who might be able to contribute to the emerging theory. Then, theoretical sampling took over in which the selection of participants became theoretically oriented according to the initial categories that began to develop from simultaneous data analysis. According to the aim of grounded theory, I used what I learnt from the analysis of each interview to inform decisions about sampling the next set of interviews (McCann & Clark, 2003). For example, in my first set of interviews I found that more than ten years' of clinical experience as a physiotherapist mediated physiotherapists' decisions to use CBT and thus I wanted to explore this in more detail so experience of less than ten years became a sampling criterion for the next set of interviews. Thus, I was looking for a variety of participants to refine these categories.

So, when issues raised from the analysis of previous data need further exploration, theoretical sampling begins. Sampling, therefore, is recognised as being controlled by the theory that is progressively seen to emerge, and thus is considered to be theoretically based (Silverman, 2014).

The first set of interviews was undertaken in the first month of data collection. I transcribed and analysed these prior to the next set of interviews. I developed a number of codes and categories and had an opportunity to discuss these with my supervisory team. The principle of theoretical sampling was applied in this stage, meaning that my interview guide was continuously modified so as to align with the preliminary findings from the first set of interviews. Thus, theoretical sampling for the next interviews also informed the questioning in those interviews and typically involved ever more focused questions (see Table 14) so as to explore the emerging categories more fully (Corbin & Strauss, 2008; Birks & Mills, 2011). For example, I identified in the initial interviews that a physiotherapist decided to use CBT when she recognised clinical signs of maladaptive behaviour during assessment. Thus, in the next set of interviews I asked more about that in order to refine and further explore the code and categories that had been developed initially (see Table 16).

**Table 14: Example of questions developed to further explore a new code or category developed in the initial set of interviews**

| Quote from Transcript  | Questions to be asked next interview   |
|--|--|
| <p><i>Um, so sometimes it [clinical signs of maladaptive behaviour] will be in something that the patient will be saying. So it might be some of the comments that they're making. "I can't do this; I can't do that." It might be quite negative comments that we're [physiotherapist] picking up on; putting barriers in the way of getting back</i></p> | <ul style="list-style-type: none"> <li>• <i>What are the clinical signs you pick up on regarding patients that make you think that CBT might be appropriate?</i></li> <li>• <i>What indicators in the assessment of patients makes you think you need to use CBT?</i></li> </ul> |

*to do what they want to be able to do. Body language as well, that may indicate they've [patients] got maladaptive behaviour problems. How the patient looks also, and how a patient appears. If a patient looks physically down, depressed, or sometimes people can look quite nervous or anxious. So, that can help you pick up a bit of anxiety. (T1)*

- *From your interaction with patients, what makes you feel that you need to introduce CBT?*

Mainly, during the process of ethical approval, ethical committees require a thorough proposal, including an indication of sample size and recruitment. In qualitative research, there is a debate about what the adequate number of interviews is (Mason, 2010), and many researchers have provided guidelines for sample sizes (Bertaux 1981, p.35; Morse, 1994, p.225; Creswell, 1998, p.64; Bernard, 2000, p.178; Ritchie *et al.*, 2003, p.84; Charmaz, 2006, p.114). For example, a sample of 20-30 and 30-50 interviews was suggested by Creswell (1998, p. 64) and Morse (1994, p. 225), respectively, for qualitative research using a grounded theory methodology. Charmaz (2006) also suggested that a sample of 25 is adequate for qualitative research (Charmaz, 2006, p.114). Ritchie (2003) stated that qualitative samples often have no more than 50 participants (Ritchie *et al.*, 2003, p.84). It is clear that there is variation in these guidelines provided in the literature. My sample size aimed to include 35 interviews.

#### **4.9. Recruitment**

Three different stakeholders were invited to participate in the study: CLBP patients, physiotherapists treating CLBP patients and those managing physiotherapy services for CLBP patients. Participants were recruited according to the following inclusion and exclusion criteria:

**Table 15: Inclusion and exclusion criteria of participants**

| <b>Criteria</b>                           | <b>Inclusion</b>  | <b>Exclusion</b>   |
|---|---|--|
| <b>Patients</b>                           | <ul style="list-style-type: none"> <li>• Patients with non-specific CLBP (&gt;3 months) who received CBT.</li> <li>• Aged 18 and above and have capacity to consent.</li> </ul> | <ul style="list-style-type: none"> <li>• Patients who are not medically stable.</li> <li>• Patients who do not speak English, since the principal researcher can only communicate in this language.</li> </ul> |
| <b>Physiotherapists</b>                   | Physiotherapists providing treatment for CLBP in the community services in Yorkshire with different levels of exposure to CBT training/learning (Table 16).                     |  |
| <b>Managers of physiotherapy services</b> | Service Managers of the community musculoskeletal-based services in Yorkshire.  |  |

I developed my recruitment strategy with help from two physiotherapists (AB and TA) from the community musculoskeletal-based services in Yorkshire. Patients were identified and contacted by AB and TA, each of whom have formal training in CBT. AB and TA are the pseudonym initials that I used in this thesis for these two physiotherapists in order to maintain anonymity. In the initial recruitment strategy for patients, an invitation letter (Appendix 10) and the participant information sheet (Appendix 11) were posted to eligible patients by AB or TA. Screening patients for eligibility

according to the inclusion/exclusion criteria was carried out by AB or TA with help from me. The invitation letter asked patients to complete the enclosed reply slip, send it back in the pre-paid envelope and await contact from the researcher if they were interested in participating in this study. They were also asked if they were happy for AB and/or TA to pass on their contact details so that I could phone them. Both the invitation letter and I stressed the fact that participation in the study was entirely voluntary and that they could decline at any time. During the same phone call, I answered any questions related to the study that patients may have, and also ensured that the patient had read and understood the participant information sheet. If the patient was happy and willing to take part in the study, an interview was arranged at a time and clinic convenient to them. On the day of the interview, written consent was taken from the patient.

Three months after the study started, I recognised that the initial recruitment of patients was slow as no patient had consented at that time. The original application for NHS ethical approval was therefore amended. A new recruitment strategy was added to improve recruitment of patients. I attended the clinics of two physiotherapists (AB and TA), both of whom had completed one year of CBT training. Patients were identified at the beginning of each clinic by a physiotherapist (AB or TA) while I was available at the clinic. AB or TA would then introduce the idea of the study to patients first. If patients were interested, AB or TA gave them the participant information sheet to read and they were informed that I was available in the clinic to give more information about the study and to answer questions. The physiotherapists asked patients if they would like to meet me, but they did not have to. If patients gave permission, I took their contact details. Then I contacted them by telephone approximately one week after they received the participant information sheet. They were asked if they had any questions about the study and if they were willing to take part.

They were reminded that participation was entirely voluntary and that they could decline. If patients remained willing to take part, an appointment for interview was made at the participant's convenience. A written consent form was taken by me at the beginning of the interview.

My attendance at each clinic served as a reminder for both physiotherapists (AB and TA) to identify patients as they may have forgotten because of their workloads and busy clinics. This new strategy was more effective and helped speed up the recruitment process.

**Table 16: Description of different levels of CBT training for physiotherapists in Yorkshire**

| <b>Physiotherapists (n=64)</b> |   |
|--------------------------------|---|
| <b>Number</b>                  | <b>Level of exposure to CBT training</b>  |
| <b>3</b>                       | One year of psychological wellbeing practitioner training. Postgraduate certificate (PGC) in low intensity CBT. |
| <b>3</b>                       | Monthly in-service training/supervision. Experienced in chronic pain (integrated pain team)                     |
| <b>40</b>                      | Two sessions a year of training relating to CBT and chronic pain.   |

Physiotherapists and managers were also identified and contacted by physiotherapists AB and TA. They were contacted by two different emails, however (i.e. one for physiotherapists and the other for managers), which were sent by AB or TA on behalf of the researcher to invite them to take part in the study. Each participant group received an invitation letter and participant information sheet by email (Appendix 10 and Appendix 11). My contact details were provided in the same email. The potential participants were asked to contact me if they were willing to take part in the study. AB sent all potential participants who did not respond a second email as a reminder one week later. I answered any questions by email and checked that the potential participants had understood the

information sheet. I arranged an appointment for the interview at their workplace at a time convenient to them. On the day of the interview, written consent was taken by me.

Recruitment of participants continued until theoretical saturation was achieved (Creswell, 1994). Theoretical saturation is the point when collecting new data was no longer able to create or develop new categories or leads (Glaser & Strauss, 1967; Charmaz, 2006). This means that at this point the relationships between categories are established (Strauss & Corbin, 1990).

#### **4.10. Participants**

As mentioned earlier, the total sample consisted of 26 participants: 11 patients, 13 physiotherapists and two physiotherapy services managers. More details about the participants and whether I achieved what I was hoping are provided in the next chapter. Both in this section and the following chapters, all participants are given pseudonyms to ensure anonymity and confidentiality.

#### **4.11. Data Collection**

##### **4.11.1 Semi-structured Interviews**

Face-to-face, semi-structured interviews were used to collect data from each participant. Using face-to-face interviews has demonstrable advantages in helping to minimise ambiguities that may occur due to varied interpretations. A face-to-face interview is better placed to capture both verbal and non-verbal cues (for example body language, which can indicate a level of discomfort with the questions) and an interviewee's emotions and behaviours. The one-to-one interaction between the researcher and the participants in face-to-face interviews makes it easier to explore participants' views in depth (Bowling, 2014) and it is therefore commonly used in grounded theory



(Nathaniel, 2008). Given the complexity of the topic, the fact that CLBP patients may be experiencing maladaptive behaviour issues (e.g., low mood, depression, stress, or anxiety), and the fact that physiotherapists may or may not apply CBT in their practice, individual interviews were considered appropriate for this study. Focus groups and observation were also considered for the study but were not used because in focus group interviews participants may not open up and discuss their views and perceptions openly, given the complex and highly individualised nature of the topic. Additionally, observation did not fulfil the aim of my study to explore perceptions, because the role of observer is to “look, listen, and record” (Silverman, 2006, p. 67). Also, observation involves prolonged engagement with the participants which was not a practical option, either for me or for my participants, because it would have required a time-consuming recruitment procedure requiring participation in multiple clinical sessions over an extended period of time.

All interviews were carried out by the principal researcher (LA). Data were collected between May 2016 and March 2017. Many patients wanted the interview to be conducted on the same day as their physiotherapy appointment. Also, the interviews were held in a place agreed by the interviewer and participant, which usually was a private room in the community musculoskeletal-based services in Yorkshire. Only one patient preferred to be interviewed at his home. His name, home address and interview appointment details were sent by email to my supervisor. On the day of the interview, I was in contact with my supervisor and I informed her by text message when I arrived at the participant’s home and when I left. Before the commencement of the interview, informed written consent was garnered from participants after the provision of written and verbal information (Appendix 12). I informed all participants that their involvement in the study was voluntary and that they could withdraw at any time and without providing any explanation.

Participants were encouraged to ask any questions that they might have about the research study before giving their written consent.

#### **4.11.2 Topic Guide**

I led the semi-structured interviews by using a topic guide, which is a set of open-ended questions related to the research phenomenon (Bowling, 2014; Bryman, 2012). The topic guide was used to ensure that the interviews focused on the following aspects. Firstly, to explore the clinical decisions made by physiotherapists, with different levels of CBT training, in order to develop an understanding of the circumstances in which they considered CBT to be an effective and feasible treatment option. Secondly, to identify the key elements that enable patients to apply what they have learned in CBT. Thirdly, to understand any wider contextual issues that impact on the use of CBT in the physiotherapeutic management of CLBP.

To guide the discussion during the interviews I used three different flexible topic guides (one for patients, one for physiotherapists and one for managers) that I developed based on relevant literature. The piloting of the interviews using these topic guides is described in the following section (see also Appendix 13). The topic guide was flexible and evolved to reflect what was learnt from participants regarding the important issues (Birks & Mills, 2011, p. 75). For example, an interview may raise an interesting issue that was not considered in previous interviews and which therefore warranted further explanation. Thus, more exploratory questions around this interesting issue were considered in the following interviews. I was guided by the previous answers of the interviewee within an interview and modified the order of the questions accordingly. Example

questions in the initial topic guide for patients, included “What was the treatment?”, “What did you do during the treatment?” “Has it helped? If yes, how or if no, why not”.

I asked participants open questions, I was asking them about barriers and difficulties, and why they did not use CBT, as well as what they liked about it.

Probes and prompts were used to guide the discussion according to the researcher’s needs. They were used when extra information was needed in response to a question so as to encourage further elaboration from participants (Rubin & Rubin, 1995; Bowling, 2014). An example of a prompt that I used during the interviewing process is shown in Table 17. I also used non-verbal cues such as eye contact and facial expressions to prompt participant’s thinking in order to enrich the data.

**Table 17: An example of using probe and prompts**

**QUOTE FROM TRANSCRIPTS**

|           |   |
|-----------|---|
| <b>T7</b> | <i>And I think it's because we become so medicalised, that normally the first question is like, oh tell me where your pain is. We never ask them how they're managing. They're all out there, having a life. How are you actually doing that life? What's happening and where are you going with it? And I think if you can have a really, I don't know, just really get engaged with somebody in the first session, I think that seems to be the key. If you can really get them engaged in the first session and get them to see what you're trying to do for them, then that seems to have a better outcome, I think. That will be one of the things that I'd say.</i> |
| <b>ME</b> | <i>What is the better outcome?</i>  |
| <b>T7</b> | <i>Where they actually engage with the CBT and they take it on board, they set themselves goals and achieve them and learn how to pace and learn how to problem solve for themselves and learn how to manage their pain better.</i>   |

### **4.11.3 Piloting the Interviews**

The initial topic guide of the interview underwent a pilot test in an effort to ensure relevance, understanding and suitability, as well as to ensure that the interviews remained on-topic. Piloting was valuable in allowing the researcher to assess whether or not an interview might be too long or too short, and whether it fulfils its aims. The piloting of the interview guide and interview techniques was conducted with a physiotherapist who is postgraduate student at Sheffield Hallam University. In addition, the first set of patients' interviews (first three interviews) acted as a pilot for the content of the interview. Subsequently, every effort was made to address the weaknesses identified in the interviewing process of these initial interviews and to avoid these issues in the following interviews. The piloting helped me learn what the important points were that I needed to keep in mind during interviews, or even when preparing for them. For instance, I realised that my friend's voice was not loud enough for me to clearly understand it during transcription. At the beginning of each interview, therefore, I reminded the participants to speak up and to speak clearly. My topic guide was restructured and modified to include more open questions such as "how" and "what" questions, encouraging the participants to speak more and thus to impart more rich data.

### **4.11.4 The Interview Process**

The duration of each interview was between 30 and 45 minutes, and all interviews were conducted in English and were audio-recorded. Field notes concerning the participants' body language and all events occurring during the course of the interviews were taken during and immediately after interview. All interviews were downloaded to the researcher's password-protected computer and transcribed by the researcher.

The researcher transcribed only the first three interviews, which took over 20 hours each. This is because my typing skills are not exceptional, and I often could not hear what was said clearly the first time round and frequently needed to replay the tape. I quickly realised that I would be unable to keep up recruitment levels and conduct a lot of interviews because of the amount of work involved in transcribing. Thus, the remaining interviews were transcribed by a professional transcription service recommended in the qualitative research course I attended in the University of Oxford. This enabled me to work more efficiently and quickly as I was then able to replay all the tapes and make corrections, add annotations and comments.

Every effort was made to maintain the confidentiality and anonymity of the participants. I therefore used pseudonyms and code numbers during transcription and data analysis instead of participants' real names. The recording was deleted from the digital recorder immediately it had been converted into text. Regular supervision meetings were held during data collection, which helped me to verbalise my feelings and concerns during the process.

#### **4.11.5 Triangulation**

Triangulation is the utilisation of a multiple of methods/sources to collect data. Triangulation means looking at the same phenomenon, or research question, from more than one source of data (patient, physiotherapist and managers). It is the use of different data to help inform, clarify and refine research findings (Murphy *et al.*, 1998). Triangulation opens the way for richer and potentially more valid interpretations. The researcher can also 'guard against the accusation that a study's findings simply relied on a single method, a single data source, or a single investigator's bias (Henderson, 1991, p. 11). It helps for example to form a theory, taking the personal and

methodological biases of the researcher into accounts. For this study, data was collected from three data sources (CLBP patients, physiotherapists and managers of physiotherapy services) and using two methods of data collection (interviews and audio recording of routine physiotherapy sessions).

I decided to select audio recording of physiotherapy sessions because it was important to listen directly to the content of the treatment session; the structure that physiotherapists followed, the discussion between patient and physiotherapist and how they set a goal, how patients agree the treatment and are empowered to participate in it. I wanted to be able to listen in order to be able to understand how physiotherapists used conversation to interact with their patients. This allowed me to identify the facilities and barriers that patients encounter during the treatment session and compare these with physiotherapists' explanation and accounts of what happens in treatment sessions. I audio recorded these interviews because what people say they do and what they actually do are not always the same thing. This way helps me basing some of my interviews on what physiotherapists had actually done to ensure I had credible i.e., truthful, accounts. It should mention that it was not feasible to record sessions for all interviews.

The treatment for CLBP patients in these sessions was delivered by three physiotherapists who had received one-year's training in low-intensity CBT and postgraduate certificate-level training (PGC) in psychological wellbeing practitioner training (PWP). The reason for recording the sessions of these three physiotherapists was that, because they had undertaken formal CBT training, they were the most use likely to use it in the sessions and to know in advance that they going to use these techniques with particular patients. This was a pragmatic decision taken to avoid the huge waste of time that might occur when audio-recording sessions of physiotherapists who

were not trained in CBT only to find when listening to their recordings that they did not apply CBT or similar techniques. Because of the time and the practical limitations, the researcher was able to audio-record only two physiotherapy sessions for this study when recording more might have revealed further insights. The researcher individually interviewed patients and physiotherapists after listening to the recording of their session. The process of sampling and recruitment of both patients and physiotherapists for session recordings was different to that mentioned earlier. Sampling of the physiotherapists was done according to their experience of CBT, because I wanted to record the sessions that were led by physiotherapists who had formal training and then include whichever patient they were treating. Written informed consent (Appendix 16) was taken from them twice; once prior to the recording of the session and once prior to the commencement of the interview. This triangulating increased my own understanding of what actually happened in the session instead of what therapists were saying that they were doing as a treatment. It also informed me about data analysis and increased the robustness of the findings.

#### **4.12. Data Analysis**

Data analysis for this study was conducted using grounded theory techniques, including coding, constant comparison, memo writing and use of qualitative data software. These core terms and techniques are described and presented in the following subsections. It is recommended in grounded theory that the data analysis be initiated as soon as the data is collected from participants (Corbin & Strauss, 2008).

#### 4.12.1. Coding and Constant Comparison

The process of coding of transcripts, field notes and memo-writing was carried out as the first step in the data analysis.

I initially coded (open coding) the interviews, which involved breaking down the data into small units, aiming at generating many ideas from the data. Subsequently, through focused coding, I selected the most prevalent and important codes according to the aim of the study, as shown in Table 18.

**Table 18: Example of initial and focused coding**

| Quote from Transcripts  | Small units  | Codes   |
|---|--|---|
| <p><i>Um, so sometimes it [clinical signs of maladaptive behaviour] will be in something that the patient will be saying. So it might be some of the comments that they're making. "I can't do this; I can't do that." It might be quite negative comments that we're [physiotherapist] picking up on, putting barriers in the way to getting back to do what they want to be able to do. Body language as well, that may indicate they've [patients] got maladaptive behaviour. Also, how a patient looks and how a patient appears. If a patient looks physically down, depressed; or sometimes people can look quite nervous or anxious. So, that can help you pick up a bit of anxiety. Sometimes it [clinical signs of maladaptive behaviour problems] will be in some of the things that the patient will be saying. (T1)</i></p> | <ul style="list-style-type: none"> <li>▪ Patient's talk</li> <li>▪ Negative Comments</li> <li>▪ Body Language.</li> <li>▪ Appearance</li> <li>▪ Interaction with patients</li> </ul> | <ul style="list-style-type: none"> <li>▪ Patient's interaction</li> <li>▪ Patient's body language</li> <li>▪ Discussion and conversation</li> <li>▪ Patient's appearance</li> </ul> |



As discussed in the previous chapter, constant comparison is another important tool used with a grounded theory approach. This occurs throughout data collection and analysis to support the development and testing of emergent theory. The purpose of constant comparison is to identify the similarities and differences in the concepts and categories being developed during the coding process (Chamberlain, 1999; Charmaz, 2014; Taylor, Bogdan & DeVault, 2016). This helps to improve the conceptual understanding of the categories (Charmaz, 2006).

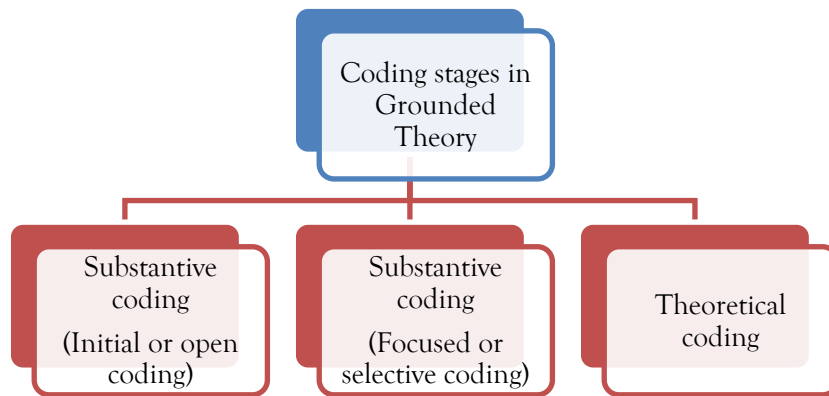
Categories were developed and compared with other categories (see Table 19). Focused codes were developed initially by comparing data with data and then data with codes in order to refine the focused codes. The initial and focused coding process was followed by the theoretical coding process, which is a high level of coding using the focused codes. Theoretical coding involves examining the focused codes and spelling out relationships between categories and concepts (Charmaz, 2006).

**Table 19: Example of using constant comparison methods**

| <b>Criteria for comparison</b>              | Physiotherapist 7  | Physiotherapist 4  | Physiotherapist 5   |
|---|--|--|---|
| <b>Recognition of maladaptive behaviour</b> | <ul style="list-style-type: none"> <li>▪ <b>Patient's interaction:</b><br/><i>It [clinical signs of maladaptive behaviour] might just be that they've [patients] said it, 'oh I've had depression for 10 years, I've always been taking tablets'. (T7)</i></li> <li>▪ <b>Outcome measurement tools:</b></li> </ul> | <ul style="list-style-type: none"> <li>▪ <b>Patient's interaction:</b><br/><i>Patients might be telling me during the subjective that they've got some quite unhelpful thoughts about their pain, like fear of the future with their pain and things like health anxiety – so thinking that the pain has a more worrying cause. (T4)</i></li> <li>▪ <b>Patient's appearance</b></li> </ul> | <ul style="list-style-type: none"> <li>▪ <b>Patient's body language</b><br/><i>Some of it [clinical signs of maladaptive behaviour] is from their body language, so they are not giving you any eye contact at all. They are not engaging in the conversation; they are giving you very short answers. (T5)</i></li> <li>▪ <b>Patient medical records</b><br/><i>I mean some of it [clinical sign of maladaptive behaviour</i></li> </ul> |

|  |  |   |   |
|--|--|---|---|
|  | <p><i>We also have been using, since we did the course IAPT [Improving Access to Psychological Therapies], GAD7 [Generalised Anxiety Disorder 7-items scale] and PHQ9 [patient health questionnaire] questionnaires to help screen for anxiety, depression and worry. So that again helps us to understand: is depression, anxiety or stress or worry a part of what's going on here? So that helps us to pick that [maladaptive behaviour] up. (T7)</i></p> | <p><i>How they're presenting as well can just give you that bit more information, I think when you're first seeing them [patients], so I'd take that into account. (T4)</i></p> | <p><i>problem] is from the GP notes. (T5)</i></p> |
|--|--|---|---|

In the initial stage of analysis, I developed the coding frame independently and then discussed it with the supervisory team throughout the data analysis so as to ensure dependability in the developed theory. Also, an independent physiotherapist coded a section of a transcript using the same coding frame so as to check the accuracy and consistency of the coding.



**Figure 4: Coding process in grounded theory (Charmaz, 2006)**

#### **4.12.2. Memo Writing**

Memos are an important tool within the grounded theory method (see section 4.3.3.3), helping the researcher to explore their thoughts and to ask themselves questions about codes and categories; all of which contributes to the process of identifying the relationships and links between different codes and categories and thus, bit-by-bit, to develop a theory (Charmaz, 2006). I kept writing memos and notes to myself throughout the research process (data collection and data analysis). I used a small notebook, margins in the interview transcript, and sometimes the note application in my mobile to write my memos and notes during interviews. At the end of each interview, while listening to the tape of the interview, when reading the transcripts and during coding, I compared the initial and later memos and notes with each other. The codes were developed using initial and focused coding as mentioned earlier in this chapter.

#### **4.12.3. Data Management Software**

Data were stored and managed during the research process using computer-assisted qualitative management software called NVivo (version 12)

([http://www.qsrinternational.com/products\\_nvivo.aspx](http://www.qsrinternational.com/products_nvivo.aspx)). This software helped in maintaining a record of initial and focused codes and the development of categories. Although this software was used to manage data, Microsoft Word, hard copies of transcripts, flipchart and pens were also used to help with analysis.

#### **4.12.4. Theoretical Sensitivity**

Initially, the aim of the analysis was to ensure that the data was interpreted from the start without the intrusion of preconceived ideas. As the data collection and data analysis progressed, however, and as the categories and theoretical codes developed, theoretical concerns began to exert an influence. For instance, the initial coding raised questions about how physiotherapists' exposure to CBT training influenced their decision to use CBT. Data collected from physiotherapists with different levels of training (undergraduate and postgraduate), and memos written in relation to this, pointed towards a need to explore the views of physiotherapists with different levels of training so as to be able to compare and contrast this with already collected data. The categories started showing relationships with each other and a bigger picture started to develop. Later analysis and memos helped in clarifying the importance of each category. Going back to audio-taped interviews, reading transcripts of interviews, memos and simply thinking and reflecting about the data helped me to clarify my thoughts and, in time, to develop a holistic picture (Charmaz, 2000).

#### **4.13. Summary**

This chapter has set out the philosophical background of this study and provided exhaustive detail on the methodology and specific methods used. Specifically, the qualitative study presented in the next chapters was conducted within a constructivist paradigm and used a constructivist grounded

theory methodology. The study settings, data collection methods, data collection process, and data analysis methods are explained and justified in detail through the course of this chapter. The next chapter will present the findings from the study.

## **CHAPTER 5: FINDINGS**

### **5.1. Introduction**

This chapter describes the findings of the qualitative study conducted to address the gap in our knowledge and to generate understanding about the use of CBT for CLBP in physiotherapy settings. The chapter aims, specifically, to answer the following research questions:

1. How, when and why do some physiotherapists make decisions to apply CBT for CLBP patients, whereas others do not?
2. What are the perceptions of CLBP patients, physiotherapists and managers of physiotherapy services about the use of CBT for management of CLBP?
3. What factors influence physiotherapists' decision to use CBT in the management of CLBP?

This chapter starts by introducing the participants' characteristics. Then, it divides into two sections. The first section gives a description of the categories developed from the data. The second section presents a grounded theory to explain how physiotherapists used CBT for CLBP. In this section and the following chapters, I have changed all participants' names to pseudonyms to ensure anonymity and confidentiality.

### **5.2. Participants' Characteristics**

Initially, sixteen patients were contacted to take part in this study; nine of these were recruited for this study. They were interviewed face-to-face in the community musculoskeletal based services commissioned to provide outpatient physiotherapy services to patients in Yorkshire and their data were

included in the findings. All patients were interviewed once, and all interviews were in the premises of the community services in Yorkshire, except for one interview which was at the participant's home. Seven patients declined to take part for different reasons. Two of them agreed to take part but preferred to be interviewed in the same clinic where they received their treatment. Unfortunately, I was not able to schedule an interview appointment for them because there was no private room available in that clinic at a time convenient to them. Three patients agreed to be interviewed and an interview appointment was scheduled according to their convenience, however they neither attended the appointment nor replied to the reminder text messages sent by me with their permission. Two patients refused to take part on account of other commitments. Five different patients, who each received low intensity CBT in their treatment, were contacted to request permission to audio-record their physiotherapy sessions. They also had to attend a single face-to-face individual interview appointment after the recording was transcribed. Two of these five were recruited on that basis. Their data are included in the findings.

All interviews with physiotherapists and managers were face-to-face in the premises of the community services in Yorkshire, apart from one that was in a hospital. Two physiotherapists were individually interviewed twice; the second interview was after the audio-recording of the two physiotherapy sessions as mentioned above. The audio-recording of the physiotherapy sessions and the related interviews took place after the nine patients and 13 physiotherapists had been interviewed and their data were initially analysed. This is because the audio-recording was used as triangulation for reasons mentioned earlier in this thesis (Section 4.11.5). I also interviewed the managers of physiotherapy services at the end, after I had finished all the interviews with patients and physiotherapists. I used the experience of interviewing the patients and physiotherapists to

help me to develop the topic guide for the interviews with the managers. I conducted all the interviews to ensure the consistency and reliability of information collected. The total number of interviews in this study was 28 interviews from 26 participants (Table 20).

**Table 20: Summary of the total number of participants and interviews of the study**

|   | No. Of participants | No. Of interviews | No. of sessions audio recorded (pairs of patients and their physiotherapists) |
|---|---------------------|-------------------|---|
| <b>Patients</b>                           | 11                  | 11                | 2   |
| <b>Physiotherapists</b>                   | 13                  | 15                | 2   |
| <b>Managers of physiotherapy services</b> | 2                   | 2                 | 0   |
| <b>Total Number</b>                       | <b>26</b>           | <b>28</b>         | <b>2 sessions</b>   |

Four male (36.3%) and seven female (46.6%) patients participated in this study. The age of patients ranged from 27 to 67 years old (mean age=59 years old). Eight patients were aged above 50 years old (73%). The number of physiotherapy sessions attended by patients before taking part in the study ranged from two to five sessions (average=3 sessions). The length of time over which they had received CLBP varied from five months to the longest of 20 years (average= 2 years). Table 21 presents the demographic characteristics of the 11 patients. I deleted the age details of the patients so that their physiotherapists cannot identify them in order to achieve anonymity.



**Table 21: Demographic description of patients who participated in the study**

| <b>Name</b>   | <b>Gender</b> | <b>Length of time patient had CLBP</b> | <b>No. of treatment sessions received at time of interview</b> |
|---------------|---------------|--|--|
| <b>P 1.</b>   | M             | 2 years                                | 3  |
| <b>P 2.</b>   | M             | 20 years                               | 4  |
| <b>P 3.</b>   | F             | 10 years                               | 2  |
| <b>P 4.</b>   | F             | 2 years                                | 4  |
| <b>P 5.</b>   | M             | 5 months                               | 5  |
| <b>P 6.</b>   | F             | 1 year                                 | 3  |
| <b>P 7.</b>   | M             | 18 years                               | 5  |
| <b>P 8.</b>   | F             | 3 years                                | 2  |
| <b>P 9.</b>   | F             | 1 year                                 | 3  |
| <b>*P 10.</b> | F             | 5 years                                | 3  |
| <b>*P 11.</b> | F             | 2 years                                | 4  |

**\*(One treatment session of each of those patients was audio-recorded and the patients were then interviewed after the researcher had listened to those recordings) - (P= Patient).**

Physiotherapists that participated were six males (46%) and seven females (54%). Their professional experience ranged from ten to 33 years (average=15). Eight had a bachelor's degree (n=8); two had master's degrees and three had a postgraduate certificate in psychological wellbeing practitioner training (PWP). The participating managers had between 25 and 30 years of experience. Table 22 presents the demographic characteristics of the 15 professionals who participated in this study, including 13 physiotherapists and two service managers. Due to the small

sample size, I cannot give much further description to maintain anonymity. Although, I already gathered information about the gender, professional band, and last qualification of all professionals, I did not provide details of these information for the same reason. Overall, I was satisfied with the variety in the characteristics of the participants. I was looking to have patients who received a different number of sessions of treatment, including CBT, at the time of the interview. I achieved this diversity since I recruited patients who received sessions ranging from two to five sessions. In addition, I achieved the diversity that I was looking for in the physiotherapists as the participating physiotherapists in this study had different levels of CBT training and different level of experience as physiotherapist.

**Table 22: Demographic characteristics of physiotherapists and managers participated in the study**

| <b>Therapist</b> | <b>* Level of Exposure to CBT Training</b> | <b>Number of Years qualified as physiotherapist</b> |
|------------------|--|---|
| <b>T1</b>        | Level 1                                    | 10  |
| <b>T2</b>        | Level 1                                    | 33  |
| <b>T3</b>        | Level 2                                    | 15  |
| <b>T4</b>        | Level 2                                    | 10  |
| <b>T5</b>        | Level 3                                    | 20  |
| <b>T6</b>        | Level 3                                    | 25  |
| <b>T7</b>        | Level 1                                    | 20  |
| <b>T8</b>        | Level 3                                    | 15  |
| <b>T9</b>        | Level 3                                    | 20  |
| <b>T10</b>       | Level 3                                    | 10  |
| <b>T11</b>       | Level 3                                    | 20  |
| <b>T12</b>       | Level 3                                    | 15  |
| <b>T13</b>       | Level 3                                    | 10  |
| <b>Managers</b>  |  |   |
| <b>M1</b>        | N/A  | 30  |
| <b>M2</b>        | N/A  | 25  |

**T = Physiotherapist, M= Manger, Levels of exposure to CBT training [Level 1: One-year postgraduate certificate (PGC) in psychological wellbeing practitioner (PWP) training that is low intensity CBT. Level 2: Monthly in-service training/supervision. Experienced in chronic pain (integrated pain team). Level 3: two sessions a year of training relating to low intensity CBT and chronic pain.], MSc: Master's degree in physiotherapy, BSc: Bachelor's degree in physiotherapy. N/A=not applicable**

Since some physiotherapists in this study were formally trained in CBT and had a postgraduate certificate (PGC) in low intensity CBT, it is worth providing a description of that training. Table 23 provides such a description as described by physiotherapists who participated in this study.

**Table 23: Description of the formal training in CBT by participants of this study**

| <b>Key points</b>  | <b>Description of the formal training in low intensity CBT by participants of this study</b>  |
|--|---|
| <b>How did they know about the training?</b>                 | <i>So, what happened was: an email went out to the health professionals in Sheffield, in the community, and they were recruiting for health professionals from various different backgrounds to go on to this course to train to be these psychological wellbeing practitioners (PWPs) to train in mental health to then go back into their workplaces and integrate it into practice. So, the actual course that we were trained on was specific to mental health. We weren't physios when we were in that role; we've trained to be this new mental health professional. And then, after that year, the past two years we've been working together to integrate these skills back into physiotherapy practice. (T1)</i> |
| <b>Description of length and settings of the training</b>    | <i>The psychological wellbeing practitioners (PWPs) training which is supported by IAPT, it was for 18 months with one day a week at university for the university year, it was a post graduate certificate and so there was one day for formal teaching at a large university in the North of England and a day and a half of clinical experience in IAPT which I thought was really, it is an in-depth course even if it is only a post graduate certificate. (T2)</i>  |
| <b>Their role during training</b>                            | <i>So training is in IAPT, which is the mental health service, that's the practitioner that works just below a CBT therapist. So, a PWP works at step 2; a CBT therapist works at step three and four, and we're trained to work at step 2, which is why we use CBT-based techniques, but we don't go into the full depth that a CBT therapist does. (T1)</i>   |
| <b>Content of training related to lecture-based training</b> | <i>Teaching us about what our role was as a PWP, what the CBT role was, what the counsellor's role was. So, it told you about all those different roles. And when it's most appropriate for you to work with which patients. It taught you about different mental health problems. But it was mostly focused on the ones that we worked with, which was the mild to moderate stress, anxiety, depression and panic. But it did also give you an awareness and we've worked on what other mental health problems are out there and how they present but recognising that that's beyond our scope of practice – that PWP step 2. (T7)</i>   |
| <b>Content of training related to</b>                        | <i>We did a lot of role-play around assessment. So, in the training we went through- Initially it started with assessments, so it talked about your assessment techniques, your questioning techniques, the types of questioning that was helpful. And it also</i>  |

|  |   |
|--|---|
| <b>assessment techniques</b>                               | <i>taught you a lot about communication skills, so things like using reflections, summarising and using empathy. That was the sort of thing that would go over. They'd talk about your sessions, so how you structure it, the time of the session, setting agendas, using outcome measures. (T1)</i>  |
| <b>Content of training related to treatment techniques</b> | <i>We trained in treatment techniques and the main treatment techniques for PWPs were behavioural activation, cognitive restructuring, exposure therapy and problem-solving. We did some work on sleep hygiene. And relaxation as well. So those were the main areas. And then we practiced those a lot in university and role plays but then we obviously had our own patient lists as well, so we were practicing and using that in practice with our patients as well. It's not a physiotherapy course at all; it's purely mental health. (T2)</i>   |
| <b>Type of education and examination</b>                   | <i>It was two-and-a-half days a week and one day was at the university, and that would be lecture-based training, role-play training, exams sort of thing. We'd have some practical where we were filmed and examiners were watching, and we had actors playing patients. Not real patients; they were actor patients. We did have real; we were tested in a real situation as well because we worked one-and-a-half days a week in the mental health service seeing real patients in real clinics. (T7)</i><br><br><i>I saw real patients in IAPT. We had to pass exams, we had to pass practical and written exams just to be let loose on patients and had to learn the technique of assessing someone for a psychological problem, you know, and being able to decide and measure whether it was anxiety or depression and how bad it was. (T2)</i> |

**5.3. A Description of the Categories**

As mentioned previously in Chapter Four (section 4.12), the data that were collected were subjected to analysis using the grounded theory approach. Initially, I familiarised myself with the first three physiotherapists' transcripts and began to recognise recurrent codes while the data were still being collected. These initial codes were developed by labelling each line in the transcript in order to understand the content of the interview and to develop categories. This resulted in a list of codes for each interview, and through focussed coding, similar codes were grouped to develop categories. Table 24 provides an example of the codes and categories in the initial stages of analysis.

**Table 24: Examples of the Codes and Categories in the Initial Stages of Analysis**

|  |   |
|--|---|
| <b>1.Recognition of Maladaptive behaviour Issues</b> | Patients' complaints<br>Interaction with patient<br>Body Language<br>Patient appearance<br>Avoidance<br>Reduced Social Life<br>Sleep difficulty<br>Negative Comments/thoughts.                                |
| <b>2.Setting priorities</b>                          | Severity<br>Urgency<br>Degree to which mental health impacted on their condition<br>Range and type of physical issues   |
| <b>3.Training in CBT</b>                             | Experience<br>Theoretical Input<br>Self-learning<br>Formal Training<br>Peer Supervision<br>Practising Skills  |
| <b>4.Experience of delivering CBT</b>                | Identifying patients' needs and expectations<br>Considering bio-psychosocial factors<br>Being more structured<br>Explain pain<br>Setting goals and agree them with patient<br>Involving patient in treatment. |

|  |   |
|--|---|
|  | Empathy   |
| <b>5.Impact on general clinical practice</b>         | Incorporate aspects of CBT into clinical practice in response to patient need<br><br>Increasing confidence in using CBT skills<br><br>Improved interpersonal skills with patients   |
| <b>6.Perspectives on physical therapist practice</b> | Time<br><br>Lack of confidence<br><br>Lack of formal training<br><br>Patients' expectations of the physical therapy role  |
| <b>7.Patients' views about receiving CBT</b>         | Addressing psychosocial problems<br><br>Counselling<br><br>Patients' active participation<br><br>Listening and talking<br><br>Explanation not instructions<br><br>Agreed goals<br><br>Empathy and emotional support<br><br>Reassuring |

This section presents the findings under the eight descriptive categories identified through the analysis: 1) recognition of mental health issues and setting treatment priorities, 2) the impact of patients' characteristics on the decision to use CBT, 3) physiotherapists' understanding of CBT, 4) experience of delivering CBT, 5) the impact of the CBT approach on clinical practice, 6) perception of the outcome of CBT, 7) patient satisfaction with CBT and 8) barriers for using the CBT approach. I have chosen the quotes that best illustrate the findings, and I tried to spread them across participants. However, there are some people who are more articulate than others. The

quotes are attributed to participants using the study identifiers (patient=P, physiotherapist=T, physiotherapy services manager= M, e.g. P3, T5, M2).

### **5.3.1. Category 1: Recognition of Mental Health Issues and Setting Treatment Priorities**

All the physiotherapists in this study who used CBT in their practice incorporated elements of a low-intensity CBT approach (see Table 23). In some cases, the physiotherapists applied low-intensity CBT-based techniques when they recognised that patients had signs of psychological factors impacting on their CLBP condition. In other cases, the patients showed signs of more severe mental health problems, for example, they disclosed that they had suicidal thoughts, which physiotherapists did not feel confident to treat, and therefore they referred them back to the GP or to the improving access to psychological therapies (IAPT) service. The IAPT service is a programme that provides a more intensive psychologist-led CBT approach as a first-line treatment for severe depression and anxiety disorders (McHale & Rutherford-Hoe, 2014). In category (3), a description will be provided of the low-intensity CBT-based techniques used by the physiotherapists who participated in this study.

When I asked physiotherapists how they made the decision to use CBT for their CLBP patients, they described situations in which they felt that the patient's psychological state impacted their condition more than biomechanical factor, so their treatment focussed on trying to improve the patients' psychological state. Physiotherapists referred to this as the patient's mental health. Most physiotherapists made the decision to use CBT at the point at which they recognised that the CLBP patient was experiencing what they described as 'mental health problem'. They described

these problems including low mood, depression, stress and anxiety. Although the physiotherapists used these terms when talking about patient's mental health, there was nothing suggesting that these patients had been formally diagnosed with a mental health condition. They used these terms colloquially in the following account.

*I think because our training is specific to mental health, so we tend to use it [CBT-based techniques] if we are recognising that a patient with chronic pain is experiencing low mood and depression, anxiety, stress. If we are picking up those mental health problems with chronic pain as well, then that is when we have been using it [CBT-based techniques] in practice, and that is when we will start to assess a little bit more about the mental health and the psychological impact living with pain is having on the person. That is when we start to introduce some principles to the patient about CBT-based techniques and seeing whether the patient is willing to engage with that type of treatment. (T1)*

Among the patient group, many of those who were advised to apply some low-intensity CBT techniques also reported that they suffered from what they termed 'mental health problems', such as low mood, depression, irritability, not sleeping properly, anxiety, stress, frustration, hopelessness, social isolation (reduced social life) and catastrophising thoughts. These sentiments clearly demonstrate the psychological and emotional consequences of CLBP, which negatively affected the patients' mental health.

Low mood and depression were often mentioned by patients. Some of them expressed that their mood was badly affected by sleep disruption arising from their back pain.

*When you've got back pain and it's affecting your sleep pattern, it affects your mood. You get a bad mood. It doesn't make you feel like you want to do anything. You feel a bit down. (P1)*



Some patients, therefore, made a link between not getting enough or proper sleep, attributed to their back problem, a depressed mood (Quote P1) and irritability (Quote P9).

*Well I do actually get into a depressed mood [laughter]. It does affect your mood. If you're not sleeping properly. (P1)*

*I'm not getting enough sleep, which makes you very, very irritable the next day. And, because you're awake all night and then you get up next day and then you've got your pain. Then, it sets you off, and it has been horrendous. And, it's all due to this back problem. (P9)*

Some patients disclosed that they were depressed by the persistence of their CLBP. One patient described negatively as a consequence of CLBP and being depressed.

*I have been negative for quite a while because it [CLBP] has got me down, you know, it [CLBP] does make you depressed. (P2)*

One patient mentioned crying all the time when describing the depressed situation she was experiencing.

*When it [CLBP] first started, I was depressed for the first five to six months. I would cry all the time. (P4)*

Stress was another problem that the patients said affected their mental health. Some patients indicated that CLBP caused them stress.

*It is causing me more stress, stress and everything. I felt really down. I felt really down (P5)*

Anxiety was another problem that affected their mental health in relation to CLBP.

*I get quite bad anxiety because of my body issues (P3)*

Some patients attributed their frustration to diagnostic uncertainty regarding their problem and a lack of understanding of its interference with the activities of daily life.

*Well I've had x-rays on it and I've had MRI scans on it. Like I say, I don't think anybody knows exactly what it [the problem] is and what, why it [the problem] affects my ability to sit. (P7)*

Hopelessness was frequently revealed when the patients described their lack of control over CLBP.

Some of them believed that there was no hope that they would recover from CLBP.

*You feel like it [CLBP] is never going to get better. (P2)*

One patient acknowledged that there is no permanent cure for CLBP.

*This [CLBP] is not something that, I don't think anybody is ever going to cure. It's [management] a case of going away and living with it [CLBP] really. (P7)*

Many patients mentioned social isolation or a reduced social as a consequence of CLBP.

*Well, it's [CLBP] affected my life greatly. I don't go out very much; I'm virtually a hermit in actual fact. (P7)*

Some patients expressed that they were more sociable before they got CLBP. One of them mentioned that he stopped participating in his favourite hobbies and activities, such as going to the theatre, football or horseracing and playing music with friends. He also said that CLBP affected curtailed most of his social life.

*I don't go out. Well anything you can think of that requires sitting down, I cannot do. I mean I could not go to a football, or I could not go to the theatre, which I used to like doing. I used to like going horseracing. It is something I am very interested in, but I have not been racing now since I hurt my back. I used to like going to pop concerts and I used to, play musical instruments in, you know with friends in a band, but all that's stopped a long, long time ago. So, it's [CLBP] curtailed a lot of my life in fact. (P7)*

Another patient reported how, because of CLBP, she had also stopped doing the enjoyable activities that she used to do, such as having dinner with friends and shopping. She linked the engagement in meaningful activities with her back pain.

*I used to have lots of friends around before; we used to have dinner or lunch, but now I can't do this because I know I'm going to feel very tired after that and it's very troubling as well. I avoid going shopping, shopping is a nightmare; I used to enjoy it before but now if I do any shopping I know that I'll be in bed after I've finished it. (P8)*

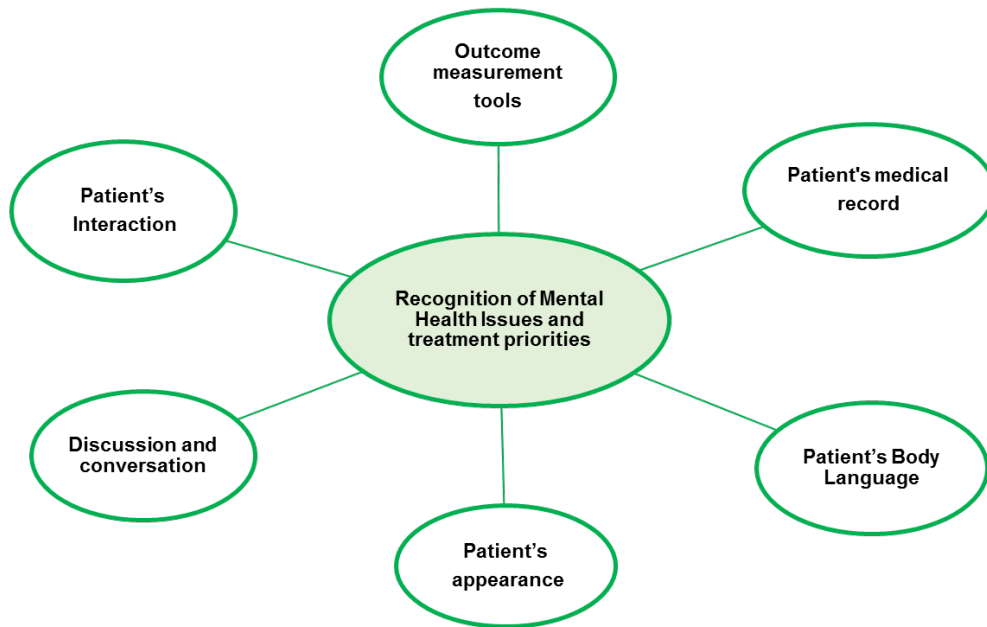
Some patients catastrophised when they thought about the unpredictable impact of CLBP on their life.

*I felt as though everything had finished. I felt, I thought I'd end up in a wheelchair or have to have an operation, something like that. I really did. I felt really down. I felt really down (P5).*

#### **5.3.1.1. Recognition of Mental Health Issues**

The physiotherapists used both formal and informal methods to recognise mental health problems (Figure 5). They were not assessing the problems formally but rather looking for clues that the patients' psychological state was affecting the experience of pain—and similarly that the pain was equally affecting their mental health and psychological state. *The formal methods* included outcome measurement tools, including questionnaires and scales such as the Keele STarT Back Screening Tool (SBST), Patient Health Questionnaire (PHQ-9), Generalised Anxiety Disorder (GAD-7), the EuroQol- 5 Dimensions (EQ-5D) Questionnaire and the Work and Social Adjustment Scale (WSAS). *The informal methods* included the patient's body language, appearance, medical records, complaints, negative comments and thoughts, barriers to

improvement, patient interaction, discussion and conversation. These formal and informal methods for recognising mental health problems are explained in more detail in the following sections.



**Figure 5: Codes related to recognition of mental health issues**

### ***Outcome measurement tools***

Some of the physiotherapists reported that they use outcome measurement tools, for example questionnaires such as the Keele STarT Back Screening Tool (SBST) (Hill *et al.* 2008) and the EuroQol- 5 Dimensions (EQ-5D) Questionnaire (Rabin & Charro, 2001), to help them formally identify mental health problems or maladaptive behaviours and beliefs.

*We have a few formal ways of doing it [assessing mental health problems], so we use the Keele STarT back screening tool, which gives us a high score if they are anxious; if depression is a problem for them in relation to the back pain, so that is specifically designed to identify those patients. (T2)*

The physiotherapists stated that patients who scored highly on questions related to depression and anxiety in these questionnaires were assessed as having mental health problems (Rabin & Charro, 2001).

*We often use questionnaires, so we'll use outcome measures. So, if on the EQ5D [the EuroQol- 5 Dimensions Questionnaire], we've got a question at the end for anxiety and depression. If that's marked quite highly, I will find a bit more information about that from the patient. (T1)*

They used these assessments as an indicator of the influence of mental health problems on the patient's condition.

*We have an EQ5D questionnaire that asks about their level of anxiety and depression, which will be another indicator [of mental health problem] (T5)*

The physiotherapists also reported using questionnaires such as the Generalised Anxiety Disorder (GAD-7) (Williams 2014) and Patient Health Questionnaire (PHQ-9) (Kroenke *et al.*, 2001) to help them assess anxiety and depression.

*We also have been using, since we did the course [IAPT: Improving Access to Psychological Therapies], a **GAD7** [Generalised Anxiety Disorder 7-item scale] and a **PHQ9** [patient health questionnaire] questionnaires to help screen for anxiety, depression and worry. So, that again helps us to understand: is depression, anxiety or stress or worry a part of what's going on here? So, that helps us to pick that [mental health problem] up. (T7)*

Some of them used the Work and Social Adjustment Scale (WSAS) as an indicator of mental health problems, especially to help them understand whether the patient's problems were having

an impact on their lives. This scale helped to reveal which areas of their lives the patients were struggling with, including work, home life or families, family situation, friends or social situation.

*We use a work and social adjustment scale (WSAS) as well, so that helps us to see how much impact a person's problems are having on different areas of their lives, so that can be quite helpful as well. (T1)*

**The indirect methods that physiotherapists said they used to identify** maladaptive behaviours and beliefs or other signs of mental health problems included the patients' medical records, their appearance and body language and the discussion, conversation and patient interaction.

### ***Patients' medical records***

Patients' medical records (GP notes) were one of the *indirect methods* used to identify signs of maladaptive behaviours and beliefs and other signs of mental health problems. Some physiotherapists believed that it was difficult for patients to disclose that they had mental health problems. By examining the medical records of the patients before receiving the patients into the clinic, the physiotherapists indicated they could learn more about the patients' clinical status, including whether they had experienced any past mental health problems, such as suicidal thoughts.

*We also have the GP notes because we've got access to that. Because it is not always something people will bring up straight away. In fact, I saw someone earlier today and actually when you look through his GP notes, although referred him for back pain but recently he's been with suicidal thoughts. So, these things [back pain and suicidal thoughts] will have an influence on each other. So, you [physiotherapist] get some of that background from that point of view. (T11)*

Being a recurrent patient and being worried about medical status are two indicators that the physiotherapists could identify from patients' medical records or NHS SystemOne<sup>1</sup> of maladaptive behaviours and beliefs .

*SystemOne is quite helpful as well, if they're a regular patient, to see their GP. So often you can see, if they've seen their GP like every two weeks or, even sometimes more frequently. And medically worried about this, or very medically unwell with various things. And they're not very good at managing those things. That can sometimes bring up a bit of a trigger as well. (T12)*

The patients' clinical referrals were seen as useful determining whether they were suffering from pre-existing mental health problems, for example, by looking at their past medical histories or whether they were on medications.

*Obviously, from a clinical perspective on the referral, you're looking to see whether we've had a history of any depression, issues at work or at home. Whether they're [patients] taking medication, that may indicate that they've got low mood. (T13)*

*Well it [diagnosis of mental health problem] will be on their medical record, well they're on medication probably from the GP, you know they've included that in notes with their doctor (T9)*

Some physiotherapists highlighted the importance of looking at patients' past medical histories, confirming that many of the CLBP patients they received had been previously diagnosed with mental health problems.

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<sup>1</sup> SystemOne: is a centrally hosted clinical computer system that used by healthcare professionals in the UK predominantly in Primary Care. Through SystemOne one record of one patient is shared between different health organisations within UK (e.g., general practice GP, hospital, mental health and social care) (Crossfield, and Clamp, 2013).

*By looking at people's medical histories. So many of the patients that we see have got a previous medical history of mental health problem (T2)*

### ***Patients' body language***

The physiotherapists indicated that one of the *indirect methods* of looking for signs that the patient's psychological state is affecting their ability to manage their CLBP was observation of the patient's body language when receiving the patient into their clinic.

*Body language as well, that may indicate they've [patients] got mental health problems also. (T1)*

Short answers, not engaging or not making eye contact during communication were all examples of patients' body language that the physiotherapists considered when identifying the influence of mental health problems on their CLBP condition.

*Some of it [clinical sign of mental health problem] is from their body language, so they are not giving you any eye contact at all. They are not engaging in the conversation; they are giving you very short answers. (T5)*

### ***Patients' appearance***

When collecting patients from the waiting room, some physiotherapists revealed that they relied on the patients' appearance and how they looked in general as an indirect method of identifying signs of problems that affected their mental health in relation to CLBP.

*As soon as you collect the patient from the waiting area you start to get some understanding about how they're moving and how they are looking. (M2)*

Physiotherapists considered the outlook/attitude of the patients and how they are presenting from the first time they saw them.



*How they're presenting as well can just give you that bit more information, I think when you're first seeing them [patients], so I'd take that into account. (T4)*

The physiotherapists also noted that, if a patient looked visibly down, anxious or depressed, it was an indicator of the influence of mental health problems on the patient's condition, such as anxiety or depression.

*How a patient looks and how a patient appears. If the patient looks visibly down or depressed, or sometimes people can look quite nervous or anxious. So, that can help you pick up a bit of anxiety. (T1)*

In addition, the physiotherapists could recognise that psychological factors were impacting on the patient's condition based on their walking patterns (e.g. walking slowly).

*If they [patients] walk slowly. (T13)*

Crying during the session was also an obvious sign that the patients' psychological state was impacting their condition.

*If they [patients] are crying throughout the assessment obviously. (T5)*

However, one physiotherapist mentioned that a patient's appearance does not necessary reflect the real status of the patient. Thus, they remained open to changing their first impressions on patient's appearance.

*Sometimes they [patients] can appear quite positive people but then when you get down to it, actually they quite restrict their lifestyle because they avoid doing certain things because that will make it worse and they talk about it. (T11)*

### ***Discussion and conversation***

Discussion and having a conversation were another indirect way that the physiotherapists could discover how the patient's psychological state was affecting their condition. Some physiotherapists used open-ended questions (e.g. 'How does the back pain make patients feel?') to encourage patients to disclose what they described as 'mental health problems'.

*Sometimes, I might try and ask a little bit more, so I ask them about how does the back make them feel or you know that sounds terrible, does that really get you down? To try and open them up to that I am interested in them saying there's some sort of anxiety and depression associated with it. (T11)*

In addition, one physiotherapist said that knowing that the patient does not engage in any recreational activities or hobbies is a sign of what they termed as 'mental health problems'. Therefore, he discussed the importance of asking patients questions about their hobbies and recreational activities.

*The one question I always ask patients is what do they do that brings them joy or happiness in their life? And if they [patients] haven't got any hobbies or things that they enjoy doing, that's often a big trigger of mental health problems, you know, if you've got nothing that makes you smile, what's there to live for? And that's often why that is a bit of clinical trigger of mental health problems. (T12)*

Many physiotherapists reported that talking to the patient during assessment helped them to identify the influence of mental health problems on their condition in the absence of the questionnaire scores.

*We can also do it [recognition of the impact of mental health/psychological state on their condition ], even if we didn't have scores, just by talking to the patients. (T2)*

Patients may be more likely to express that they are suffering from considerable problems in their lives, such as family or marriage issues to physiotherapists than to a GP. The physiotherapists indicated that some patients discussed suicidal thoughts with them, although they were not

expecting psychological treatment in physiotherapy. They believed that the patients' discussion of such life problems is another useful way to detect signs of what they described as 'mental health problems'

*People discuss suicide with me. I have one of those faces that people feel they need to tell me everything as most physiotherapists do I think, that you know they have not, often not spoken to their GP about it, but they are having huge problems with their marriage, their children; all of these various things going on. (T5)*

### ***Patient interaction***

Patient interaction is one of the informal methods the physiotherapists mentioned. Many physiotherapists highlighted that talking with patients in the session was important in helping them to identify whether the patients had maladaptive behaviours and/or beliefs in response to pain, which could indicate that they had a mental health problem.

*It's [assessing mental health problems] often a lot about what people are saying. (T1)*

Patients' disclosure of their mental health problems was important in helping the physiotherapists to identify their problems.

*It [diagnosis of mental health problem] might just be that they've [patients] said it, oh I've had depression for 10 years, I've always been taking tablets. (T7)*

The physiotherapists revealed that they could pick up many different things from what patients said, such as fear of the future based on unhelpful worrying about pain. These maladaptive beliefs and thoughts in response to pain served as a sign of mental health problems.

*Patients might be telling me during the subjective that they've got some quite unhelpful thoughts about their pain like, fear of the future with their pain and things like health anxiety – so thinking that the pain has a more worrying cause. (T4)*

According to the physiotherapists, the patients' comments, particularly negative ones, such as 'I can't do this, or that', were a sign of the influence of psychological state on their condition.

*Sometimes it [assessing signs of mental health problems] will be in some of the things that the patient will be saying. So, it might be some of the comments that they're making. I can't do this; I can't do that. It [patient's comments] might be quite negative comments that we're [physiotherapist] picking up on. (T1)*

The way the patients responded to the physiotherapist during the conversation (e.g. reacting negatively) also played a role in identifying whether or not their psychological state was affecting their condition .

*If they respond in sort of more negative ways than in positive ways. (T13)*

The physiotherapists picked up other cues from what patients were saying based on how they described things and the words that they used to describe their problems; for example, they said their back pain was always 'worse', even if it was not actually worse in the current case. Patients' use of catastrophising language helped the physiotherapists to identify the possible impact of their psychological state on their condition.

*They [patients] often catastrophise things that they have got. They all tend to say with 'What has your back been?' it will always be worse, it has got worse, but they can't necessarily pin down what they mean it has got worse, you know, they will say it has got worse but then you look at the notes and you think this is the same as when you were seen a year ago, it looks the same, so those sorts of things that they say. (T11)*

Patients' fear avoidance of doing daily activities was another sign that indicated that they had maladaptive behaviours.

*They tell you about things that they avoid, things that will make their back much worse that they mustn't do, and those sorts of things. (T11)*

The physiotherapists believed that the language that the patients used, such as 'I'm riddled with back pain', helped them to pick up signs of the impact of mental health on the patient's condition. The way in which the patients communicated their issues and how they attributed their problems were also helpful.

*They [patients] use certain language and terminology. You know, I've got a brittle back and I'm riddled with it [back pain]. (T12)*

### **5.3.1.2. Setting Treatment Priorities**

Treatment priorities play a role in the physiotherapists' decision-making in terms of whether or not to apply CBT-based techniques. The physiotherapists indicated that they prioritised addressing what they termed 'mental health problem' and physical problems depending on the severity and urgency of the problems.

*Yeah, ideally if we pick it [assessing mental health problems] up sooner, we can try to bring in it [CBT based techniques] soon. Sometimes, it's not always [um] you don't always pick it up straightaway. I think the difficulty sometimes is that there may be other physical issues going on and we might have to address them. If they are urgent issues, then we might need to address them first before turning to address mental health issues and working with CBT. So, for example, if our patient comes with cauda equine symptoms we have to assess and treat and manage that first before considering managing the depression for example. Unless the depression is so high that it may lead them to suicide, ideally, we need to address both these very serious issues as we can but if we don't think that depression is severe that might be an issue that we can come next after sorting the priority issues. (T1).*

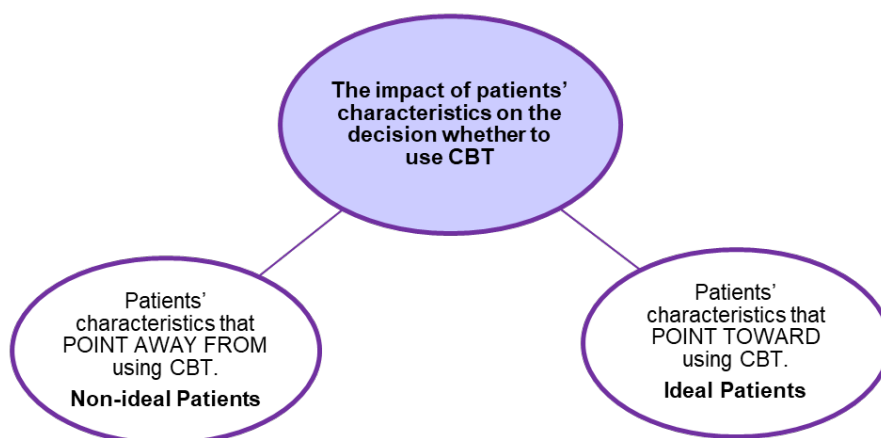
Thus, having what the physiotherapists described as 'mental health problems', does not always lead to their application of CBT-based techniques as a first intervention for patients. Instead, those techniques could be delayed until an urgent physical issue has been treated. Indeed, it is clear that

the use of CBT-based techniques depends on priorities, as patients' cases are varying rather than similar.

*So, some patients we can bring [CBT based techniques] in very soon; some patients it will be a bit further down the line, but it depends on the priorities that we need to address initially. So, it's variable. It changes. (T1)*

### **5.3.2. Category 2: The impact of Patients' Characteristics on the Decision Whether to Use CBT**

When I asked physiotherapists when they decide to use the CBT approach for CLBP, they reported being influenced by many different characteristics of the patients. Some of these characteristics pointed them towards using the CBT approach, with some patients considered to be ideal for this approach (e.g., failed previous treatment), whereas other characteristics pointed them away from using CBT, as the patients were considered non-ideal (e.g. not being ready to effect a change in their condition) (Figure 6). A summary of these characteristics is provided in Table 25.



**Figure 6: Codes related to the impact of patients' characteristics on the decision whether to use CBT**

### **5.3.2.1 Patients' Characteristics That Point Towards Using CBT (Ideal Patient)**

The physiotherapists who had formal training in low-intensity CBT reported that they used the CBT approach for patients who showed signs that psychological factors were impacting their condition, such as stress, anxiety and panic. This is because they had trained as psychological well-being practitioners (PWPs), which allows them to apply low-intensity CBT techniques to treat patients with mild-to-moderate, but not severe, mental health problems. This level of training and practice is referred to as step two in the mental health system in UK.

*We are trained as PWPs [psychological wellbeing practitioner] to work at step two in the mental health system. So, we are trained to work with people with mild to moderate stress, anxiety, depression, panic; so, we can work with people with mild to moderate conditions. (T1)*

Some physiotherapists reported that they tend to use the CBT approach for patients when they recognised that their pain chronicity was having such a significant impact on their lives that a physical approach alone would not provide optimal treatment.

*If that [chronic] pain is having such an impact on them that, maybe, a more physical approach may not be that successful on its own, then I would use a bit of CBT. (T4)*

One impact of chronic pain that was frequently reported by many of the physiotherapists was in fact psychological problems such as depression and anxiety. In the physiotherapists' experience, this was an indication that, for those patients, the CBT approach might work for them.

*Patients who have chronic back pain that is leading them towards depression and anxiety, maybe they are the patients that respond better. (T7)*

Another impact of chronic pain that was also commonly reported by the participating physiotherapists was the inability to get out or socialise due to chronic pain, meaning that these patients need more than physical treatment.

*With a lot of my patients with chronic pain, there is a lot more going on psychologically and socially, as well as the physical health problems. (T1)*

Many physiotherapists also talked about the maladaptive beliefs that occur because of chronic pain and how these need to be addressed through a CBT approach.

*The people [patients] I see with back pain have often had back pain for quite a long period of time, so they do not just have the physical characteristics of that disease; I suppose that their thought processes are often quite altered of how they view things, and emotionally they can be quite altered. So, I spend a lot of time addressing those sorts of things. (T11)*

Some of the physiotherapists said that they apply the CBT approach for patients with maladaptive behaviours and beliefs who worry, over-think and experience fear-avoidance characteristics with respect to movement.

*If it is clear that they are over thinking, they are still worried about it regardless, they are still worried no matter why, they just still seem to be worried and hypervigilant and they seem a bit scared of movement; they are the people who I would apply it [CBT approach] to. (T6)*

The physiotherapists said that they preferred to use the CBT approach rather than the physical approach for patients whose chronic pain caused functional limitations, or for those whose understanding of their illness indicated that they had maladaptive beliefs.

*If they are telling me during the subjective that they've got some quite unhelpful thoughts about their pain or if it [chronic pain] is so limiting for them functionally, I would tend to go more for the CBT approach rather than the sort of hands on or physical approach. (T4)*



Further, physiotherapists stated that their tendency to use the CBT approach was influenced by the coping strategies the patients adopted to manage their pain.

*It [use of CBT approach] does all depend on how that person is coping with their back pain. (T1)*

They reported that they tended to use the CBT approach with patients who had poor coping strategies and were poorly managing their pain.

*The people who are struggling with not the best coping strategies. (T1)*

Some of the physiotherapists expressed that they were inclined to use the integrated pain team (IPT) approach when their patients had previously failed to improve through conventional physiotherapy. According to one physiotherapist, an IPT is a team of physiotherapists who have a substantial experience in integrating elements of CBT in the treatment of chronic pain for patients whose psychological state is impacted their condition.

*If people have had previous failed physio, then I would tend to go down the different approach and the IPT [integrated pain team] sort of approach with people. (T4)* The physiotherapists believed that patients who had failed previous treatment lacked self-management strategies, even when they had received back care education and had a good understanding of pain. Such patients thus require a CBT approach to address their needs in a different way.

*Probably, if they have had lots of physio before. So, if they have been round the block a few times with different physios. They have done all the basics, they have had all the basic education, they know about back care, they know how pain occurs, but they just need something a bit different. They need a different approach to kind of just engage them in*

*self managing. So, the patients who are not managing. The ones that keep getting referred back because they haven't learnt how to manage themselves. So, the ones that aren't coping. (T1)*

When the physiotherapists recognise that their patients have high expectations of themselves but are not achieving what they are hoping for, they tend to introduce the CBT approach to forestall the problems that could arise in such situations.

*Those who set big or high expectations of themselves, I think. They expect a lot from themselves and they cannot achieve it because of the pain. So, certainly that group. (T1)*

Some physiotherapists expressed that they tend to use the CBT approach for patients who are open-minded about how to make a positive change in their condition.

*I think if they are open-minded to trying anything to help their condition. (T4)*

Some of the physiotherapists believed that well-motivated patients also require a CBT approach to guide their management to prevent them from losing control of their pain. This is because these patients can sometimes attempt to do too much, which can have adverse effects:

*I used it [CBT approach] for well-motivated patients, I think sometimes, you are guiding them along but it is not necessarily that you are giving them too much more. They might know the techniques, but they might be over-applying them. Therefore, it might be about reining those well-motivated patients back in to manage their condition. Because the well-motivated ones tend to be the ones that go away, they do everything you say, to the letter, and more. Therefore, it is somewhat like, making sure your well-motivated patients are motivated but reined in, so they do not do too much. (T7)*

In contrast, managers of physiotherapy services believed that all patients, regardless of the severity of their problem and the length of time that they had experienced it, require some element of the CBT approach.

*I think all patients have an element of belief and understanding that will require education and advice. So, I would say every patient requires a component of CBT. Even your sprained ankle patient whose behaviour is that they're not walking properly because they're fearful that they'll cause more damage, or they're fearful that they'll make it hurt. Through to the patient who's had long-term back problems for 20 years and believes that their spine is crumbling. So, it doesn't matter how long they have had a problem for or how serious the problem is. (M2)*

Table 25 provides a summary of the characteristics of CLBP patients that pointed the physiotherapists in this study towards or away from the use of CBT.

### **5.3.2.2 Patients' Characteristics That Point Away from Using CBT**

The physiotherapists reported that they do not use the CBT approach with patients who have certain characteristics, which will be discussed in this section. For example, they indicated that they do not use the CBT approach for patients who show signs of more severe mental health problems (e.g. they disclosed that they had suicidal thoughts). The physiotherapists did not feel confident treating such patients and therefore referred them back to the GP.

*If somebody has quite severe mental health problems, then, actually, we're not trained to work with those people. (T1)*

Although it was mentioned above that some physiotherapists believed that well-motivated patients require the CBT approach to guide their management, others expressed that well-motivated patients do not need a CBT approach.

*I do see a lot of patients where I don't need to use that [CBT based technique], you know, when they are more motivated. (T1)*

Many of the physiotherapists reported that they could not apply the CBT approach with patients who were avoiding everything that their physiotherapists asked them to do. They found it difficult to deal with patients who constructed obstacles to their own improvement.

*If they're avoiding doing things, if they're putting barriers in the way so I can't move forward because they can't see past it. (T1)*

One physiotherapist further described such patients as 'stropky' and 'awkward'.

*If they just seem stropky about everything that you say, you might just say to them, 'What do you want out of the session? What would you like to get from physiotherapy?'. You would stop telling them things. If they are putting up barriers to everything that you say you might just back off a little bit. If they just do not seem to believe anything, you say. Just awkward personalities who are blocking almost. (T6)*

Some of the physiotherapists stated that, when patients are managing well psychologically and coping with their chronic pain effectively, the CBT approach is not indicated.

*I do see patients who have chronic pain that, actually, psychologically, are managing okay, and it's not all patients with chronic pain who need CBT. Yes, they've got pain, but some people are coping with it a lot better than others. (T1)*

The physiotherapists said that some patients with what they termed 'long-term mental health problems' were coping better than other, and they only needed some conventional exercises.

*I have seen people who are actually coping well with a long-term mental health problem. It doesn't necessarily mean that that's the reason that they're struggling with their chronic pain and, actually, they did just need a few exercises." (T1)*

Sometimes, the relaxation work involved in the lower-level CBT techniques can have unintended adverse effects, and, in such cases, the physiotherapists reported that they discontinued using the CBT approach. They said that such cases require more intense CBT, which was not within their boundaries of practice.

*There was a lady where she had chronic low back pain and I tried to do some CBT-based techniques. It was relaxation work. So just doing relaxation work with her as well. She had a history of anxiety as well. And I just recognised after about three sessions that it wasn't helping and she felt like she was in more pain because of doing these things. So, I actually discussed her with a supervisor in the mental health service. Because sometimes relaxation can have an opposite effect and it can even make anxiety worse and pain worse. The person I discussed this with also worked in a pain clinic, and they advised that she needs stepping up to CBT. So a more experienced CBT therapist to look at in more depth. It was more that I was limited with my experience. (T1)*

Some of the physiotherapists stated that patients who are not engaged in their treatment are unsuitable for CBT.

*The ones that, they just come back week after week. You have set goals with them, you have talked through stuff, they come back, and they just say I have not done it. They are just the non-engagers. They come back in and you know they say, oh well yes, I did not do it. You are kind of explore why, oh well I did not have time, or oh no my back was sore, so I was not going to try that. They just don't engage with anything that you do with them." (T7)*

Other physiotherapists stated that they could not use the CBT approach with patients who are not ready to make changes. They described such patients as switching off during treatment. They do not make an effort or set a time for their treatment, and they do not have realistic and achievable goals.

*They [patients] are not actually ready to make those changes. I think when they do not think that they have time, or they cannot create any time. If they still, despite the conversations you can see them switching off. If they have no goals. They do not really know even after our conversation what they want to be able to achieve apart from pain relief. (T5)*

A manager of physiotherapy services felt that CBT may not be the first option for such non-engaging patients, suggesting starting with what the patients expect from physiotherapy and then applying CBT after creating a good rapport with them.

*If a patient is not ready to listen and to engage with a CBT-type treatment, then that approach may not be the first inroads to that patient, but, starting with some physical therapy and meeting them where their expectations are, in order to bring them towards more listening and understanding about how they can challenge their behaviours and their thoughts. (M2)*

Some of the physiotherapists believed that there may be other deeper reasons that patients are not engaged in treatment and make simple excuses, such as lack of time. These deeper reasons could include personality disorders, more severe mental health problems (e.g. depression) or addiction problems (e.g. alcohol problem).

*I think the biggest thing that I have learnt is when people aren't engaging it is often because there is another deeper problem, so more depression than they realise and they need more help there, or they have got something like personality disorder, there is some deeper reason. The other thing would be an addiction type of problem, an alcohol problem or something like that that we couldn't help them as much with CBT, so we can't help at the minute. (T2)*

The physiotherapists expressed that they did not use the CBT approach with patients who do not yet accept their problem because that kind of situation is especially challenging for the physiotherapist.

*Some of the patients just are not ready to accept that they are going to have chronic pain and so [physiotherapist] kind of hit a bit of a barrier. (T3)*

The physiotherapists believed that, when patients are unable to accept their problem, they are not in a position to make changes.

*Sometimes it's not the right time in somebody's life to actually engage with making changes. They maybe need a bit more acceptance. (T7)*

One physiotherapist described such patients as being in a denial phase and so they are not in the right frame of mind to receive or engage with the CBT approach.

*The patients that are kind of in denial of, that actually it's their problem. That they've got to live with it, and they've got to manage it. Well they're kind of like, well I've done that before. Everything you try and talk about, they go oh I've done that, I've done that. So, you know, that if that's how they're feeling at the moment then there's no point trying to impose, you know, cognitive reconstructing on somebody who is not in the right frame of mind. (T7)*

The physiotherapists indicated that when their patients are not worried about their pain, are somewhat relaxed, and are not suffering psychologically from their pain they would not use the CBT approach with them.

*People who are relaxed, who don't seem too bothered about their pain, who are not worried about it; I would not do [CBT approach]. (T6)*

Some physiotherapists reported that they would not use the CBT approach with chronic pain patients who had a good understanding of pain and how to manage it. They said that the fact that the patients have chronic back pain does not necessarily mean that they struggle in their daily lives due to their pain.

*I suppose just because someone's got chronic pain doesn't mean to say that they need CBT. So, someone might have chronic back pain but be managing perfectly well day-to-day, so working, doing their hobbies and, you know, have a good understanding of their pain and a good understanding of how they manage it. Then, I would tend to not go as much down that route. (T4)*

**Table25: Summary of the characteristics of CLBP patients that point physiotherapists toward or away from using CBT**

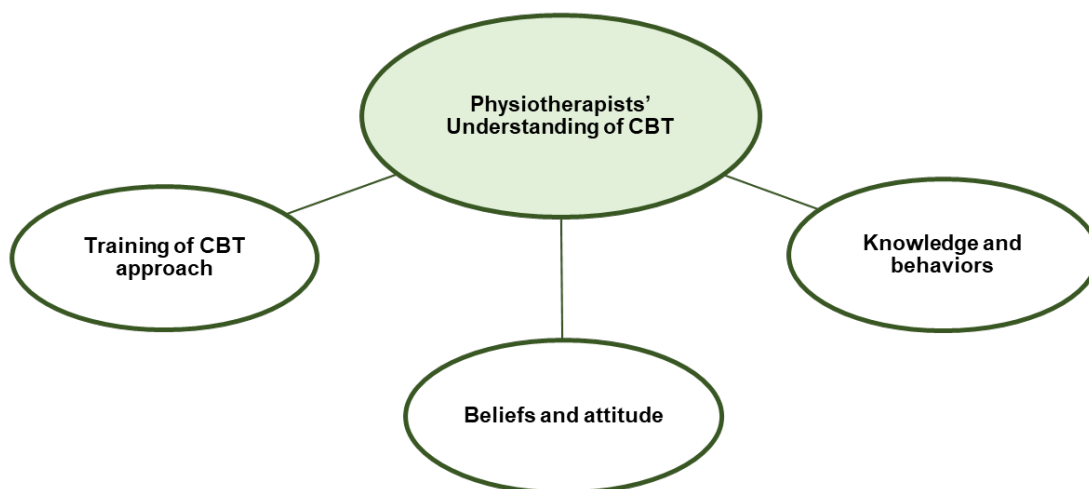
| Patients' characteristics that pointed physiotherapist towards using the CBT approach (Ideal Patients) | Patients' characteristics that pointed physiotherapist away from using CBT approach (Non-Ideal Patients) |
|--|--|
|--|--|

|   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. <b>Had signs that psychological factors were impacting on their condition.</b></li> <li>2. <b>Chronic pain impact on their life functionally (fear avoidance of doing daily activities)</b></li> <li>3. <b>Failed previous treatment</b></li> <li>4. <b>Lack of self-management strategies</b></li> <li>5. <b>Have high expectation of themselves and not achieve their goals</b></li> <li>6. <b>Well-motivated patient (to guide to avoid adverse effect of doing too much such lose control over pain)</b></li> <li>7. <b>When mental health problem is the greater and need to be addressed first as apriority.</b></li> </ol> | <ol style="list-style-type: none"> <li>1. Had severe mental health problems (such as post-traumatic stress disorder PTSD)</li> <li>2. Not ready to make change</li> <li>3. Not proper time for them</li> <li>4. Not accepting their problem</li> <li>5. Not engaged in the treatment</li> <li>6. Managing well psychologically</li> <li>7. Had good understanding of pain and coping strategies</li> <li>8. Had adverse effect of relaxation exercises (make anxiety and pain worse)</li> </ol> |
|---|---|

**5.3.3. Category 3: Physiotherapists’ Understanding of CBT**

This category describes physiotherapists’ knowledge, behaviours, attitudes and beliefs towards the CBT approach (Figure 7). It also describes their training in the CBT approach. Before discussing the three codes related to this category, a description will be provided of the CBT-based techniques which were used by physiotherapists who participated in this study.





**Figure 7: codes related to physiotherapists’ understanding of CBT**

### **5.3.3.1 CBT based techniques used by physiotherapists in this study**

This section starts with description of the CBT based techniques that were used by physiotherapists participating in this study. These techniques included behavioural activation, thought challenging, worry management, problem solving, talking therapy, and signposting. These techniques were described by physiotherapists who participated in this study in the ways shown in the following table (Table 26).

**Table26: Description of CBT techniques according to the physiotherapists participated in this study**

| CBT techniques | Description according to the physiotherapists participated in this study |
|----------------|--|
|----------------|--|

**Behavioural activation**

*Behavioural activation is a more structured method of getting people to be more active, looking at giving them choices and making it a very personal plan for them, looking at routine activities, pleasurable activities, and necessary activities, rather than just physiotherapy exercise. So it's incorporating daily tasks such as shopping, for instance, or housework, into a plan and A, to get them more active and, B, that could be then using a specific muscle group for physiotherapy but particularly with pleasurable activities, getting people to find activities that they can agree to do, rather than just being taught physiotherapy exercise or using exercises from physio tools. So, incorporating enjoyable things like swimming or cycling or walking, and coming to a graded- With all these things, it's not just doing it as a vague plan, but as a specific plan that's graded and with agreed goals. So, smart goals that are timed, specific, and small steps. (T2)*

*Behavioural activation is a technique that has got strong psychological evidence as part of the CBT method, but it also fits in very well with physiotherapy. (T2)*

*It's kind of just another form of physiotherapy, in a lot of ways. So, that's a thing that we found most useful with a lot of patients. And the idea is that if you change your behaviours and become more active, then secondary to that your thoughts improve or you get less negative thoughts. So, anxiety and negative thinking changes firstly by doing things and by being more active. (T2)*

*As an example for behavioural activation, I would often start with very basic, walking would be one thing I would suggest. It is easier than swimming or exercise bike or anything like that. So just starting with five minutes. Some people who are not going out of the house, for instance, might just start with five minutes' walk along the road. They might then make that into walking to the shop once a day. The next step might be walking to the shop twice a day. Then the week after that they might go to the park. If they have back pain, they might find that getting up out of the chair, walking around for five minutes, gives them temporary ease. If they keep doing that regularly, it builds up and builds up. Therefore, you have a written-down plan for the next three weeks, or you would, just for the next week, you know, how much they can increase their activity with walking to get to 20 minutes, for instance. (T2)*

*Often with behaviour activation, there's a diary attached to it. You can either use a formal diary or you can use a plain piece of paper and just write down timed activities. We have sheets that we would give out to people. (T2)*

*We use behaviour activations and encouraging people to exercise, we have got leaflets about exercise and blockages to exercise and why people worry about exercising, why it is good for people, that is the thing that we use most, we do use exercise and activity activation in terms*

|                                   |   |
|-----------------------------------|---|
|                                   | <p><i>of enjoyable activity, necessary activity and routine activity, we sort of put it into that perspective, we use activity diaries and we use a more structured way. (T2)</i></p> <p><i>We apply a lot of what we call behaviour activation which is different from giving people exercises like in physio before we did the CBT training we would have been giving people exercises and encouraging them to be more active, but would have failed a lot of times because people's mood or their anxieties were much better at challenging it, looking at people's anxiety about exercise and talking to them about it and making goals and talking about worries and helping them, so we have the worry management strategy. (T2)</i></p> <p><i>The behavioural activation was kind of one of the first things we used. And I kind of, I linked in well with this one, I think, because it's about behaviour and activity. So I could understand that from a physical point of view. (T7)</i></p> <p><i>Sometimes, towards the end of the first session, I might come to the conclusion that yes I am not finding anything that I want to work on physically, so I will then use the rest of that session to, so that is one of the advantages I think of this dual role is that you can switch half way through and the advantage to the patient is that the same practitioner can decide, yes we have looked at the physical, we are happy we don't need to go down that route we need to look at the psychological things and we can just do it seamlessly in one session as opposed to the patient having to go away and wait to see another professional, so you have got that ease of access to talking therapist because you can just morph from, in one session, it is not as though you are even having to refer them to another physio, a dual trained practitioner can do both of those. (T2)</i></p> <p><i>So it has moved us, I think comparing us from a physiotherapist who does a very much more physical examination and a physical treatment, we definitely use talking therapy, we can spend the whole of our session talking to the patient and agreeing plans and agreeing goals with them, and using behaviour activation with them to try and encourage them, which fits very well with physio, so as well as the educative behaviour we have two main strategies from the CBT point of view. One was behavioural activation and the other was thought challenging, worry management sort of techniques. (T2)</i></p> |
| <p><b>Thought challenging</b></p> | <p><i>Thought challenging is a CBT technique for dealing with patients' worries, which is part of the overall anxiety problem. People can have specific worries about the pain. Negative thoughts like "I'm never going to work again or I can't do this or I can't do that", which is part of the negative thinking style that they might have generally in life. They might, whenever something goes wrong, they might find it quite difficult to have a positive response to that.</i></p>   |

*They might have a lot of negative thoughts about money, about other aspects of their life. (T2)*

*You can look at the negative thoughts and explain to patients that some people have problems with negative thinking. And there are different styles of negative thinking. So we have information sheets that people can see how their own thoughts are part of patterns. Then you can challenge it, the negative thinking, in a general way, or you can challenge it very specifically about worries that they might have around work or the pain and how it affects them, relationships, or all sorts of different worries that they have specific to the main. And it's more than just telling them don't worry. (T2)*

*We would give them information. We've got written sheets that they can read and explain negative thinking styles and they can see their own styles and challenge themselves. Or you can pick a particular worry and you can pick it apart in more detail. So, we've got specific sheets that we can use or you can just use a piece of paper when you've asked them what they think of that, you know, what the thought is that worries them. Then you would think of how much that worries them as a percentage, or out of ten. So when they think that part, does that really worry you? Then you can look at evidence for that thought, why they think that and look at evidence against it. Then they can sort of balance it of themselves after, and they can see how you can challenge a thought, that you don't have to believe every thought. (T2)*

*Patients can then do that themselves; they have that strategy. They can take away a piece of a paper and they can write a thought down and learn how to do that structured thing. It helps them to see what other options are and maybe to look into the future as well. (T2)*

*My understanding, I guess, of CBT, and I am aware this is a kind of very basic level, would be sort of intertwined with listening to patients' fears regarding pain and trying to understand some of their behaviours surrounding pain as well, and then if possible challenge some of those misconceptions and thoughts when it comes to exercising, when it comes to doing things. (T8)*

*We can use written things regarding worries which are thought challenging, specific thought challenging, things that we can work out with people who have worries about their pain or condition, they might have some and we can see if that is a reasonable challenge of thoughts and we can use the formal, written way of doing that or we can just talk through it but we will be talking through it in a structured way of IAPTs [Improving Access to Psychological Therapies] CBT principles rather than just telling the patient not to worry about the back because of the thing in x-ray or whatever. (T2)*

*I certainly found the principles of cognitive restructuring helpful and thought- so, thought challenging, because before you get so many patients who are so worried about what's going*

|                                |   |
|--------------------------------|---|
|                                | <p><i>on and also where their thoughts- it's very dictated by their thoughts, so they might think, oh, well, my back hurts when I do this so I should never do that because it's going to harm. Or, I'm worried about what's going to happen in the future. I'm going to end up in a wheelchair and all these sort of things. And we educate really well in physio but I think one thing we've been missing there is teaching or helping people understand that thoughts are not facts and, actually, a lot of the time we really do think that thoughts are facts and we often believe them and you see that a lot with people with pain, they really do believe the things they're thinking. And especially when there's family around them telling them similar things. (T1)</i></p> <p><i>We can do practical things like breathing exercises, relaxation, mindfulness we have got a range of information that we can give them, computer based things we can give people. (T2)</i></p> <p><i>There was a lady where she had chronic low back pain and I tried to do some CBT-based techniques. It was thought-challenging and relaxation work. So just doing relaxation work with her as well. Some thought-challenging work. And she'd got a history of anxiety as well and she'd been to CBT before. And I just recognised after about three sessions that it wasn't helping and, if anything, thinking about things, she felt like she was in more pain for practising these things. So I actually discussed her with a supervisor in the mental health service. Because sometimes relaxation can have an opposite effect and it can actually make even anxiety worse and pain worse. So the person I discussed also worked in pain clinic, and they advised that she needs stepping up to CBT. so a more experienced CBT therapist to look at in more depth. And it was more that I was limited with my experience. (T1)</i></p> <p><i>Challenging and trying to think about alternative ways of thinking about those things, that can be really helpful. And things like helping to manage worry. So the worry tree is a useful one. So helping people manage their worries as well, their worries about pain. (T1)</i></p> |
| <p><b>Worry management</b></p> | <p><i>Worry management might be a bit more of a general thing. We would have various things that we can give to people to talk about general worries. Are you a person who worries about everything and is your back pain just part of that? It can help people to challenge their own worrying behaviours. Rumination would be when people just go over and over. I've been off work with my back for so long; I'm never going to be able to go to work again. That sort of useless worrying. A technique you might use would be give them worry time where you say, look, sit down with a piece of paper for two minutes and worry. It is okay to worry and write down what you are worrying about. (T2)</i></p> <p><i>If after two minutes patient have not come to a conclusion as to what you can do about it, it's about accepting that, actually, I can't do anything about what I'm worrying about; there's no point in worrying. Then leave your worrying. Then if you have a worry time every day</i></p>   |

|                               |  |
|-------------------------------|--|
|                               | <p><i>where you can sit down, consciously worry, and then consciously stop worrying, it helps you break the cycle. (T2)</i></p> <p><i>You could have a worry tree where you sit down and write on, like, the leaves of the tree all the different worries and look at them. And if you can't make a plan to improve things, you leave them on the tree and get on with. (T2)</i></p> <p><i>There are strategies that we can use to help worry. Relaxation would fit into that as well. You can use it as even a physical thing as part of the behavioural activation thing, where it is more like an exercise. It is relaxing to change the thoughts, to focus on breathing rather than thoughts. (T2)</i></p>   |
| <p><b>Problem solving</b></p> | <p><i>Problem solving would be another CBT technique where we would maybe focus on a specific problem, like “I want to get back to work”. How can I do it? Breaking that down into manageable, agreed steps. (T2)</i></p>  |
| <p><b>Talking therapy</b></p> | <p><i>The talking therapy would be a low-intensity CBT technique that you use would incorporate the behavioural activation and the thought challenging, relaxation, worry management and problem solving.(T2)</i></p> <p><i>There is a structure for talking to patients, whereas before you might just have tried to talk to patients and tell them what to do. I think we were much more into telling people what to do in an empathetic way. Now we would see it as much more part of a structure.(T2)</i></p> <p><i>“We can also do it, even if we didn’t have scores, just by talking to the patients and looking at people’s medical histories. So many of the patients that we see have got previous medical history of mental health problem” (T2)</i></p> <p><i>“...and actually try and talk about that [mental health problem] with the patients a bit more as well, because sometimes they often say, oh well I’ve had depression, but I’ve had that for years. And you try and say, well how do you think it’s affecting your back, whatever it might be. Or how do you think, you know, is your physical problem having an impact on how you feel about things and your mood? So I would say, I would link it in much more than I used to, much more.” (T7)</i></p> <p><i>We also use a pain toolkit which introduces that concept as well, it is one of the elements of the toolkit, it is recognising anxiety and depression can make pain more persistent, and we can use that as a way of talking to patients about it and, you know, asking do you want to talk, would you like some information about this and we can start off by either providing them</i></p> |

|                           |  |
|---------------------------|--|
|                           | <p><i>with the written information that we have got using the websites that we have talked about and then using the talking strategies.” (T2)</i></p> <p><i>“I would always try and use one of the scores in the EQ5 to introduce it [depression] and say you ticked this, you told us on the form that you are severely depressed in the minute and then introduce it that way and relate it to back pain, so can be relevant to back pain and do you want to talk about it, is it okay for talking about it” (T2)</i></p> <p><i>So kind of talking around the subject and getting people to talk around it, rather than just trying to ask them, well why are you like this?” (T7)</i></p> <p><i>“Talking through it [worry/thought] in a structured way of CBT principles rather than just telling the patient not to worry about the back because of the thing in x-ray or whatever” (T2)</i></p>  |
| <p><b>Signposting</b></p> | <p><i>Signposting is a really useful tool that we learned with the course [IAPT] and is part of the CBT approaches. Making sure we do not discharge somebody or we do not end care; that we always signpost them to the next stage of care. There is always a next stage and support from somewhere else. (T2)</i></p> <p><i>We signpost much better back to GPs under IAPTs and services like that when we recognise that it is out of our scope of practice that we signpost on, whereas in the past I think we would have just sent a letter back to GPs saying lots of yellow flags, we can’t really deal with it sort of thing, so now we write back to GPs and say ‘This person is really worried and really anxious or they have a panic problem, can they be referred to IAPT for something specific so we can guide treatment much better.(T2)</i></p> <p><i>The other big thing I think that we do better with the CBT approach is the signposting. We recognise the importance of signposting people for longer-term support and for additional support, a range of support and services there are for people’s mental health problems; we can signpost into that much better. (T2)</i></p> |



From the audio recording of some physiotherapy sessions, I heard physiotherapists using some of these CBT techniques during the sessions. They demonstrated a confident capability during the recorded session, possibly because they had formal training in CBT.

The following sub-sections discuss the three codes related to the physiotherapists' understanding of CBT.

### **5.3.3.2 Knowledge and behaviours**

Some physiotherapists emphasised that CBT is an important intervention for management of CLBP.

*I think CBT has been an integral part of physiotherapy practice for chronic low back pain whether people know it as a technique or not (T5)*

Some physiotherapists expressed that they found a difference between CBT and physiotherapy in terms of communication. They believed that the CBT-based techniques that they had learned and used were more structured and patient driven than conventional physiotherapy methods.

*I think the main differences between that and being, doing physio assessments is, it's a lot more open-ended questions. Far less leading questions. Use of the funnelling techniques where you're asking them open-ended questions and then kind of refining it down until you can summarise what their problem is. So it's really about pulling out from the patient what their problem is and then being able to summarise it back to them, and confirm that that's right, and then kind of from the problem, move on to kind of where they want to be. (T7)*

*You might say that a certain amount of CBT falls within the kind of remit of having good communication skills to start with and maybe that is all I am doing. (T8)*

Another physiotherapist, however, recognised that there was an overlap between physiotherapy and CBT and felt that they both had the same aim.

*I just don't think that physiotherapy is all about the mechanical medical model of treatment and I think a lot of physiotherapy is about communication, helping people to understand, helping them to help themselves, and I think for me that's what CBT is and also it's what*



*physiotherapy is to me. I do some hands on, but I don't do very much these days. And I always like to think that my patients still get better as in better, not necessarily pain wise, but better with their problem, so I think there's a huge overlap. (T5)*

Many physiotherapists stated that they used some CBT based techniques, for example, they spoke about using thought challenging and behaviour activation in their practice, but they did not refer to them as CBT based techniques, perhaps because they were not formally trained in CBT.

*I do not have any formal training in CBT but as part of my physio background, as physios we are very encouraging on the role of exercise and promoting increased function and physical activity. So I use that idea of working with patients with chronic pain to try and challenge their sort of thoughts and ideas about their pain, to try to help people become more active and function better, and overall manage things better, really. (T4)*

There was an awareness of the aims and techniques of CBT, and the conditions it might be used with, even amongst physiotherapists who were not formally trained in CBT.

*My understanding I guess of CBT and I am aware this is a kind of very basic level, would be sort of intertwined with listening to patients' fears regarding pain and trying to understand some of their behaviours surrounding pain as well, and then if possible challenge some of those misconceptions and thoughts when it comes to exercising, when it comes to doing things. (T8)*

*I suppose it is the talking therapy, isn't it? It is the talking. And I know from working with the two physiotherapists who had one-year training there are lots of different tools that they use from their experiences working with people with anxiety and depression and pain. (T4)*

Many physiotherapists recognised CBT's use for depression, anxiety and chronic pain.

*I know CBT is used in chronic pain but it is used in a whole wide range of clinical settings. Sort of depression, anxiety, yes, predominantly, I suppose, but yes, it is used within chronic pain. (T4)*

One of the physiotherapists who was formally trained in CBT, disclosed that exercise as stand-alone is not always the optimal treatment for all patients.

*We were doing a lot of work with patients who needed a lot of motivating, who were very depressed, very anxious, and that kind of made me realise that actually I'd spent a lot of years trying to get people motivated without really realising, that just giving them exercises wasn't enough. (T7)*

Many physiotherapists found that CBT techniques were more useful in promoting lifestyle change.

*I just felt CBT based techniques really fitted in with my role at the time, of trying to get people to make big lifestyle changes. (T7)*

Behavioural activation, one of the CBT-based techniques, was familiar to physiotherapists; therefore, it was easy for them to incorporate it into their treatment.

*The behavioural activation was kind of one of the first things we used. And I kind of, I linked in well with this one, I think, because it's about behaviour and activity. So I could understand that from a physical point of view. (T7)*

Physiotherapists mentioned that reassuring patients that they would not damage themselves further by increasing their activity was a helpful element of the CBT approach.

*The CBT approach is that sort of trying to get people the reassurance; they are not doing any damage or there is potentially no mechanical problem for the pain. (T9)*

Physiotherapists reported that a benefit of CBT was that it led them to approach the patient in a holistic way, that is to understand the patient's experience more widely rather than to focus on their pain alone. It also encouraged them to involve the patient in their treatment and they felt that this was an important benefit of the approach.

*The meaning of CBT is about an understanding of the patient and you have to understand a holistic need and understand the patient holistically to get them to engage in physio and understand their condition. It is important that the patient does understand that they have to be partaking in their own rehabilitation as well as coming- part of it coming from the clinician and that is part of CBT. (T13)*

Some physiotherapists learnt about CBT themselves but had not done formal training.

*Cognitive behavioural therapy, I mean I have read a book on it, I've had no formal training. (T6)*

Many physiotherapists did not say that they used CBT, because they did not use those words to describe what they did. When they described what they did, however, there were similarities with CBT, for example, thought challenging as reported in the quote (T6) and teaching patients positive coping strategies as in the quote (T9) below. Their treatment was aimed at modifying a patient's beliefs and thought processes around what is harmful and what is good for them.

*I know that it's about challenging your beliefs and you have a thought, and then looking for evidence to whether that thought is true or not. And going through a reasoning process. I don't talk to patients in CBT-based techniques terms. Well maybe I do and I do not realise I do. (T6)*

*I'm not trained as a cognitive behavioural therapist, but my understanding is it's not like counselling where we're trying to oh let's look at your past and let's analyse why did you do that, it's more, cognitive behaviour therapy to me is more trying to manage the things around pain. So I'm trying to change their ideas and beliefs and giving them that sort of moving forward and learning to pace themselves and believe in themselves and not be fearful and frightened to move forward with the problem, not to be continuously static. (T9)*

One physiotherapist felt that the value of taking a CBT approach was becoming more widely recognised within physiotherapy practice.

*I think in terms of physiotherapy I think the CBT approach is a more recent idea that has come through about the importance of those sorts of things. I guess they are not that recent but they are becoming further up the list of things to do. (T11)*

Some physiotherapists, who did not have formal training in CBT, disclosed that they used some aspects of the CBT approach in their clinical practice. They recognised that developing their skills

and knowledge about psychological approaches to use with patients improved their ability to treat a wider range of patients.

*We are trying to convince people to move, think, and behave differently. So it is a psychological, even though we are doing physical things, how we get people to do that I think is psychological approaches. CBT type things. So I think the more knowledge you have of those sorts of things then the better you can be or the bigger your toolkit of different ways of dealing with different people to help them move forwards with it. (T11)*

To summarise, many physiotherapists used CBT techniques in their practice but they had different levels of training and therefore different levels of knowledge and skills in how to apply these techniques.

### **5.3.3.3 Beliefs and attitude**

All three physiotherapists who had formal training in the use of CBT techniques confirmed that they felt the CBT approach was effective in the management of CLBP patients whose psychological state was affecting their experience of pain. They revealed that the CBT approach helped them to motivate patients to engage with and take ownership of their treatment and to improve their physical and mental health status.

*CBT incorporated into physiotherapy worked brilliantly, worked really, really well, because the patients were trying to make changes and did have a lot of depression and anxiety. It really helped to just move people on and made a change in their life. (T7)*

Many physiotherapists who did not have formal training in CBT acknowledged that the approach was useful and effective for some patients.

*CBT approach is useful. Physiotherapist can get some good results with patients. I suppose when you see people working towards making that change, I suppose. So maybe they might have been stuck in the pain cycle for a long time. And when you see somebody working*

*towards making a change, whether it be to start to improve their function a little bit more or their understanding of their pain. So, some people say, well, talking through that has helped them to understand their problem a little bit more, then, yes – that's quite nice to see, which I probably wouldn't have seen if I was handing them 10 exercises now and then seeing them again two weeks later. (T4)*

As mentioned earlier in this category, physiotherapists again felt that CBT helped them take a more holistic approach to the assessment and treatment of patients whose mental health was impacting their physical health

*Before I might have seen depression or anxiety on their past medical history and not even thought about how that was relating to their medical, physical problem. Whereas now I think, oh okay, actually, they've got chronic pain but actually there's a lot of anxiety so is there a lot of fear and avoidance because of the anxiety? And are they linked in together? And so now I kind of look at people a lot more holistically, a lot more combined, and think, well actually how is the mental health affecting the physical and how is the physical affecting the mental? And try and integrate CBT based techniques a little bit more. (T7)*

Many physiotherapists had a positive attitude towards the CBT approach.

*I like the CBT approach because I do a lot more sitting talking to people than I used to do, but actually with those sorts of people [whose mental health was affecting their pain experience ], it worked a lot better. (T11)*

For example, they recognised that educating patients about the problem and how the psychological factors negatively affected their ability to manage their problem was an important goal of treatment.

*Those type of patients [whose mental health was affecting their pain experience ], they gain more from just purely sitting down and having some understanding of why they're having problems and how the other things, the thoughts, the feelings and the anxiety and all that sort of stuff, can influence their symptoms. (T12)*

One physiotherapist described the approach as revolutionary, indicating that it had changed the way he worked with patients.

*I think CBT approach has been an eye opener, it has been a really revolutionary skill for us to have because some people just want to know what's wrong with them, they want to find out and if everybody is only ever looking at it from the physical perspective they keep coming across this barrier that nobody can ever find what's wrong, nobody can find me anything that helps but sometimes you just open up (T2)*

Many physiotherapists recognised the importance of understanding the multidimensional nature of pain and subsequently the need for a psychosocial approach to treatment.

*We are now moving towards this type of treatment [CBT approach], so we have to engage and use this type of understanding [biopsychosocial model] within the realms of the treatment. (T13)*

Physiotherapists agreed that training to improve their competence in applying CBT had increased their confidence in using the approach and this changed their professional practice and improved their job satisfaction as well as improving patient outcomes.

*It is the challenge of changing your own perceptions of illness and what back pain is. The challenges moving away from yellow flags to defining what yellow flags are and defining by calling anxiety and depression, anxiety and depression and not yellow flags and having a strategy for, I think it makes you more relaxed about doing, if you have got a strategy you can apply it and you can enjoy applying it and find it rewarding. (T2)*

Managers of physiotherapy services and the other health professionals were thought to be supportive of the approach and physiotherapists recognised that support and appreciated it.

*We are lucky in this department that our manager is very much involved with it and very much supports it and encourages it and recognises I think the importance of it within musculoskeletal things. [Um] so, I could not feel more supported to be honest. Above our management, I suspect there is still quite good support even from the medical profession, from the pain clinic, from orthopaedics, there is quite a bit of support for; I've not come across much of new resistance to what we are doing, only support really. (T2)*

Physiotherapists indicated that managers of physiotherapy services supported them in using CBT although they restricted with constraint such as finance.

*The manager at the top is very supportive, trying to support us, as in at the top of the physiotherapy service. I think it's difficult because they're trying to support us but at the same time, they've got restrictions in terms of finances and the restrictions they put on externally about how much time we can spend with people, how much money they can put into this (T1)*

#### **5.3.3.4 Training in the CBT approach**

Physiotherapists recognised the importance of continued professional development and updating their knowledge and skill in the use of CBT techniques knowledge in order to maintain good clinical practice.

*I think it is really important that we have on-going training. So although we've had this training for a year, like physio, our skills often need updating and we need to improve and my concern is that, oh, we've been put back into practice. But where's our training going to come from to keep these skills to be as good as we can do. (T1)*

Physiotherapists, who had undertaken formal training in CBT, emphasised the value of such training in their clinical practice.

*I can recognise things in patients that I haven't recognised before, so it is probably the single course it has made most difference to my practice I think for all those years that I didn't have that insight, I was missing something out with a significant number of patients (T2)*

Some physiotherapists expressed the beneficial effect of the postgraduate training programme in enhancing their clinical reasoning by developing their understanding of the bio-psychosocial model.

*I went on a course as part of my MSC I did a module on pain, pain management. Then from that then it raised my understanding about pain and the psychosocial model sort of understanding that everything affects everything else so everything is interlinked. (T9)*

Some physiotherapists expressed dissatisfaction that they did not receive CBT training as part of their undergraduate training, and they felt this was a significant gap in the undergraduate curriculum.

*When I was an undergraduate, there was nothing about CBT. So, there still isn't a lot of emphasis on how psychological therapies could be part of physiotherapy actually. Because of the service I work in here, we see a lot of people with mental health problems, it is hard to believe that CBT is not on the initial training course. (T3)*

When physiotherapists did receive training for example from in-service training, they found it challenging and did not always feel confident to integrate it into their usual practice.

*I have never had any training in actual CBT but we do have the knowledge shared through the in-service training, and so I think I do apply quite a lot of those [CBT-based techniques] sorts of ideas but to be honest sometimes not feeling confident enough to carry on. (T11)*

Many physiotherapists reported that they gained an overview of the approach from their in-service training, but they did not have an in depth understanding of CBT.

*Because I have not done the formal training, it is difficult for me to understand only from the in-service training. But I think from my perspective what you try to do is understand the actual individual that you're treating and find a way of overcoming a problem that they've got. And it's usually through a cognitive way of doing it. (T13)*

Although the physiotherapists who had received formal training tried to cascade the CBT skills and knowledge they had acquired to the other physiotherapists, the physiotherapists who received this informal training did not feel confident in using the approach and felt they needed to know more.



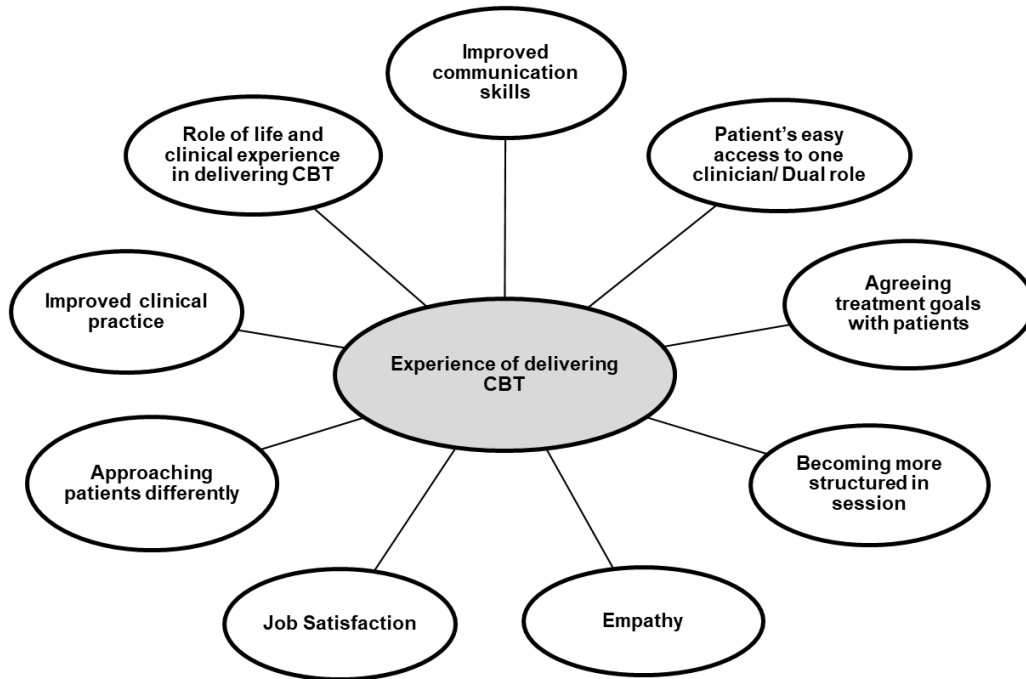
*I have not had any formal training, and I think sometimes I am a bit unsure how far I can go with that because actually I am not a recognised CBT clinician. I think until I had some formal training, because again I need to be sure that I am not giving incorrect advice... need to be safe really. (T3)*

Many physiotherapists felt that formal training and qualification was necessary before they used CBT with patients despite the fact that they had also said they used elements of CBT techniques in their practice.

*I feel like CBT is something that I should be doing, something that to a degree I am expected to do, something that I am not terribly comfortable with because I don't feel that I have had sort of formal training to do it and I think that it is a difficult thing. I cannot apply the CBT because of, as a sense, it is a qualification and I have not done the qualification. (T8)*

#### **5.3.4. Category 4: Experience of Delivering CBT**

The physiotherapists talked about their experience of delivering CBT (Figure 8) and how it changed their practice. Many of them also talked about how it changed their communication with their patients. As part of this, some discussed quite subtle changes and I have tried to include all of these; as a result, some subsections within this category are bigger than others.



**Figure 8: Codes related to the experience of delivering CBT.**

#### **5.3.4.1 Improved Communication skills**

Many physiotherapists expressed that they had learnt new communication skills, and some reported that their pre-existing communication skills had improved. The communication skills reported by physiotherapists included the use of summarising, reflection and emphasising, encouraging patients to lead sessions, promoting dialogue, acknowledging patients' problems and using positivity and reassurance with patients. These are discussed in the subsections below.

*Use of summarising, reflection and emphasising*

Many physiotherapists revealed that they learned new communication skills such as summarising, reflection and emphasising what patients told them. These skills improved their communication with patients and had a positive effect on patients.

*I think one thing that the CBT-based training taught me was a lot about the types of communication. That has really helped me with speaking to patients and listening to patients. So, in a way, I thought, as physios, I think we're quite good at communicating anyway, or I thought I did, until I did this course, and then I picked some really useful things up. That is one of the most powerful things that patients fed back to me is 'I felt like I would be listened to'. 'I felt that you have really understood me'. And I think a lot of that comes from the reflection and the summarising and the empathising, and those are skills that I don't know whether I did do or not before but I certainly didn't do them as much as I do now. And that sometimes can be really powerful for a patient, so that's been really useful. (T1)*

Many physiotherapists indicated that feedback to the patients what they were expressing, such as maladaptive beliefs in response to the pain, was a good way that helped to open a discussion with them about that issue.

*I think challenging some of their thoughts or emotions. So say, you know, feeding back to patients, 'you told me earlier that you were quite fearful about movement, what exactly is it that you are afraid is going to happen when you do that?' (T11)*

### ***Encouraging patients to lead sessions***

Some physiotherapists believed that applying the CBT approach taught them to encourage a patient to take ownership in the session.

*I think it has changed how I work. So, a bit more patient-led, I think, in the sessions. (T4)*

Encouraging patients to be part of the process of problem solving by asking them open-ended questions to facilitate the active participation of patients in their own management was reported by many physiotherapists to be new communication skills in their clinical practice.

*I try to give patients a lot of choice in what they want to do.. Because often and again the people I see, there is not a straightforward answer for them. It is not a kind of oh I have seen you and this is what we are going to do. (T11)*

*I am quite honest with patients, I say, 'Look, I do not think there is anything that is going to miraculously sort you, but these are the sorts of things that you could consider doing that might help, what do you think to that?' So, it is a bit of passing it over to them. (T11)*

### ***Promote dialogue***

One of the communication skills that physiotherapists reported to have improved was their way of interacting with patients. The physiotherapists found themselves promoting a dialogue in which there was a two-way flow of information between the parties, rather than simply being a one-way didactic flow from the physiotherapist to the patient.

*It's a dialogue, so when they are choosing what they want to do, that will be down to them [patients] to say well actually yes from what you [physiotherapist] said I think exercising might be something that I should do. (T11)*

*I talk to my patients very differently now, it is not an interview anymore, I do see it as more of a conversation or dialogue to get out the relevant information and see what is important to them, and then I would take it from there. (T3)*

### ***Acknowledging patients' problems***

Engaging in a dialogue encouraged patients to explore their problems more deeply and it also helped physiotherapists to construct a good therapeutic relationship with patients. It allowed physiotherapists to express acceptance and support for patients' problems.

*Trying to get a relationship with the person very quickly and to come across as somebody who is really listening to them and understanding how this thing is affecting their whole life and all the different aspects of it, so you are really on their side with things and you are acknowledging that they are having a lot of problems and a lot of pain. (T11)*

### ***Being positive and reassuring with patients***

Many physiotherapists found themselves encouraging and motivating patients by using more positivity during a session, which, in turn, had a positive outcome.

*I try to use quite a lot of positive things that I can see with them. (T11)*

Reassuring patients played an important role in chronic pain management. It helped patients to understand their problems.

*I am very careful of the sort of language I use. So, I do quite a lot of reassurance I suppose about how back pain is normal, that's a thing that lots of people have with it. I often, if they have had investigations, I spend quite a lot of time going through the investigations with them. So that they understand, a lot more from that point of view, which is something I think people find helpful. (T11)*

#### **5.3.4.2 Patients' easy access to one clinician /dual role**

Physiotherapists felt that CBT gave them the ability to combine two roles, namely physiotherapy and psychology. This allowed them to look at the patient holistically in line with the biopsychosocial model.

*Sometimes, towards the end of the first session, I might come to the conclusion that yes I am not finding anything that I want to work on physically, so I will then use the rest of that session to deal with the mental health issue. So one of the advantages, I think, of this dual role is that you can switch half way through, and the advantage to the patient is that the same practitioner can decide, yes we have looked at the physical, we are happy we don't need to go down that route we need to look at the psychological things and we can just do it seamlessly in one session as opposed to the patient having to go away and wait to see another professional, so you have got that ease of access to talking as a therapist because you can just morph from physical to mental health role, in one session, it is not as though you are even having to refer them to another physio, a dual trained practitioner can do both of those. (T2)*

Physiotherapists felt it was helpful to be able to combine two roles according to the patient's need. This is because they believed that treating a patient through one clinician helps the patient to avoid the waiting entailed in referring them to a different clinician, given that this waiting might have negative consequences for their condition. They also believed that this could keep consistency of care and seeing the same person where there is already a rapport and a good relationship, which is needed for discussing the influence of psychological state on their condition.

*I think sometimes that is really important that [treatment] it comes from the person that is looking after you all the time, that you are not referred on to a secondary care service or a service that is difficult to access and it's called psychology, it is just you caught me in mood and caught me at worries and it's de-medicalising I think and it is providing access to talking therapists at a really easy level for patients and at the lowest intensity and easiest access for them. (T2)*

#### **5.3.4.3 Agreeing treatment goals with patients**

Identifying specific goals and reviewing progress towards achieving those is part of the CBT approach. Many physiotherapists reported that they felt more equipped to help patients set themselves specific and achievable goals. Physiotherapists believed that they agreed goals with patients after they made these goals much more functional and patient orientated.

*Before I think we would have liked to have thought that we had patient orientated goals, but a lot of the time I don't think we asked enough, deep enough, questions to find out what the patient's goal really was. They always tend to be, although we kind of say they are agreed, we often, you know, write them once the patient has gone, so they are not really agreed with the patient. Whereas now I try and sit down with the patient and go, 'Okay what is it that you want to do?' So before, they might have been vaguely agreed with the patient, but not specifically, and they would have been much more kind of like, 'I want to reduce my pain, I want to increase my movement in my knee...' Now I kind of tend to make them much more functional and I try and agree new goals with them each time they come, with a lot of the patients. (T7)*

Some physiotherapists discussed that the variety of the CBT-based techniques allowed them to set and agree specific goals with patients compared to a more mechanistic physiotherapy approach in which patients were more passive recipients of treatment.

*I think we are much better at making goals, checking that people have achieved goals. The low intensity CBT approach involves home working, involves patients doing a range of things that we can come back and say to the patient how are you getting on with what we agreed; which is just that bit different from just applying physiotherapy when you would be limited to a narrower approach, to activity and exercise, being more prescriptive, because we have got a better agreed goal. I think patients need that. (T2)*

#### **5.3.4.4 Becoming more structured in sessions**

Many physiotherapists reported that they had learned more structured ways to explore patients' problems by incorporating the CBT approach into their practice.

*I do not think I have ever been that structured. I tend to sit down with the patient and try to figure out where they think the problems lie. I focus a little bit less on the physical side and more on their thoughts and their feelings and their beliefs and unhelpful feelings about their pain. (T12)*

They incorporated CBT-based techniques in the management of chronic pain using a structured approach that they had not used before.

*Talking through it [worry/thought] in a structured way following CBT principles, rather than just telling the patient not to worry about the back because of the thing in the x-ray or whatever. (T2)*

This structured manner reduced the challenges that physiotherapists faced in dealing with chronic back pain patients.

*I think with that sort of chronic back pain problem [i.e. mental health was affecting their pain experience] I think a lot of physios maybe struggle with them; they are difficult people*

*to deal with, and I used to struggle with them. Now, I think less because I have taken a different sort of approach [CBT based techniques] to trying to deal with it. I think it is quite sort of more structured, what I do with them, because I know where I am wanting to end up with them and how we get towards that bit of it. (T11)*

#### **5.3.4.5 Empathy**

Some physiotherapists revealed that CBT training positively influenced the ways in which they interacted with patients, for example they felt they were able to show empathy more effectively than before.

*After I did CBT training, I use empathy a lot better than I ever did before. (T2)*

Other physiotherapists expressed that their life experience, in addition to their experience of delivering CBT, also positively influenced their use of empathy with patients. They become more empathetic than before.

*You have to be quite sympathetic and empathetic towards things, which I do not think, certainly, when I was younger, I do not think I was like that at all. You know, certainly with patients coming in, they had not done what I had asked them to do, you know. Certainly now, having a kid and being married and other commitments and things, it definitely makes a difference to where you think you have time to do things. (T12)*

One experienced physiotherapist discussed that the attitude of physiotherapists and their therapeutic relationship with patients correlated to the outcomes. They felt that the more empathic physiotherapists were, the better the outcome of the treatment.

*I think there is a good amount of research from psychological therapies that the therapist effect is important and the effect is that how they interact, how empathetic they are, will have a difference on the outcome and how much they gain with the patient, so it is not easy, but if you don't do it, if you don't think about it, you will never improve so I am keen that people [physiotherapists] learn some techniques. (T2)*



#### **5.3.4.6 Job Satisfaction**

Job satisfaction refers to the satisfaction of delivering a good service. Physiotherapists reported that they felt better equipped to meet patients' needs and therefore their work was more satisfying.

*Before I just would have thought, well you know, you need to do your exercises; you are not doing your exercises so therefore I cannot help you. Whereas now I have other ways to help people. So if they are not going to do their exercises, then that is fine. But I've got a better way of explaining, well actually if you do not do your exercises, this is what's going to happen, do you want to stop? I can just talk around things better. Honestly, I would not have been able to do pain management without CBT approach skills, because I think I would have gone a bit crazy myself. It has given me a lot more tools in my bag, to kind of bring out. So I think, I find my job a lot more satisfying. (T7)*

One physiotherapist commented that although the CBT approach was demanding, she was satisfied doing it.

*I do not regret doing it. I wish I had done it sooner. But I would also say I am more physically drained from doing the treatments. But I would say it's much more satisfying. (T7)*

#### **5.3.4.7 Approaching patients differently**

Physiotherapists talked about how the CBT approach changed the way in which they approached their patients. Some physiotherapists believed that they used a more holistic approach in which they looked at function and associated biopsychosocial factors instead of particular joint movement.

*Looking at how I approach patients, yes. I think it has, rather than concentrating on things like range of movement or strength, I think it's looking at function and the thoughts and*

*feelings and, yes, just having that slightly different approach to things, I think a bit more of a hands-off, a bit more of a talking to patients, talking through things. (T4)*

Many physiotherapists realised that not all patients with chronic pain need physical treatment; some of them benefited from a biopsychosocial approach for assessment and treatment.

*There are times when I've actually not done any physical work or treatment with patients, but have just sat, and spoken with them. And because I've actually understood what's going on in their life, I've actually made a big difference in that sense. So, it's not really a hands-on approach; it's more of a sitting-down, discussing sort of approach in that respect. You know? With regards to patients that I've seen, I think it's all about holistic. You've got to look at it in a holistic way. (T13)*

Talking through things related to patient's conditions was the most frequent change physiotherapists spoke about.

*The CBT approach has moved us, I think comparing us from a physiotherapist who does a very much more physical examination and a physical treatment, we definitely use talking therapy, we can spend the whole of our session talking to the patient and agreeing plans and agreeing goals with them. (T2)*

Some physiotherapists highlighted the importance of talking as therapy for patients with chronic pain.

*It is noticeable in the last five years, I think, that, for me, the patient comes in with just so many problems, and my practice has changed. I do so much less hands on than I have ever done. I do much more talking with the patient, but I do not think that that is a bad thing actually. I think as a profession maybe we need to talk to our patients a lot more than we do. (T3)*

One physiotherapist used the word 'life coach' to describe what she felt she had become after delivering the CBT approach. This means that the patient is getting advice about how to live with CLBP, rather than treatment to reduce pain.

*I think I just approach patients differently. I must talk differently because some of the patients that I have known for years, just go, yes that is really good, you've kind of turned into a bit more of a life coach than a physio, you know. (T7)*

#### **5.3.4.8 Improved clinical practice**

Physiotherapists acknowledged that their clinical practice improved after delivering the CBT approach. Their clinical reasoning changed so that they relied less on the biomedical model and moved to a to a more biopsychosocial approach.

*Certainly I moved away from being very tissue based, in terms of, you know, being very obsessed about, it's this problem, this area of the body that's causing the issue. It became a lot easier to explain to patients what happens in the brain and how it affects tissue and the effect of stress and anxiety on the nervous system, and then they can relate to that a lot more and, certainly, they can then start to think about triggers. (T12)*

Some physiotherapists disclosed that prior to adopting the CBT approach, they did not consider or address patients' psychological state and they did not realise the effect these had on patients' and their condition in the way that they do now.

*I think before, to be honest, I would have, if someone came in clinically depressed, I would have written it down on my notes but it wasn't anything to do with me, you know what I mean? I'm a physio and you're anxious and that's not my problem. Whereas now I recognise that their mental state is going to have a huge effect on their clinical status. (T9)*

Changing patients' mind-set is one of the aims of the CBT approach. Physiotherapists revealed that before using the CBT approach they lacked the ability to deal with patients' worries and concerns.

*I certainly found the principles of CBT helpful because before you get so many patients who are so worried about what's going on and also where their problems are very dictated by their thoughts, so they might think, oh, well, my back hurts when I do this so I should never do that because it's going to harm. Or I'm worried about what's going to happen in the future. I am going to end up in a wheelchair and all these sorts of things. And we*

*educate really well in physio but I think one thing we've been missing there is teaching or helping people understand that thoughts are not facts and, actually, a lot of the time we really do think that thoughts are facts and we often believe them and you see that a lot with people with pain, they really do believe the things they're thinking, especially when there's family around them telling them similar things. (T1)*

Many physiotherapists commented favourably on how a biopsychosocial approach and the use of CBT had improved their clinical practice.

*Ten years ago, I was a very mechanical physio. Now I am more and more from this psychological emotional point of view physio. And that is good for me and patients. (T10)*

Using the CBT approach in practice did not mean that physiotherapists neglected the physical aspect of patients' conditions.

*I spend more time talking and listening than I do, I suppose, in looking at them physically; how they are moving, although that is always part of it [patient's problem], you start on the physical bit of it, so I think you can often see their problem in how people move or how they are trying to get across to you what's wrong with them. (T11)*

However, they expressed their appreciation for the additional skills they had acquired from the CBT approach. They felt these were valuable skills for clinical practice.

*I will be honest that when I first graduated and during my university days, I did not think I would be needing things like this. I was very much a hands-on person. I am a practical person myself and hence probably why I am suited to physio. I did not think I would need these types of strengths and areas within my treatment techniques. But I think it's becoming ever more apparent nowadays. I think it is a good thing to have. I think in health care now we need these types of qualities as a clinician. (T13)*

#### 5.3.4.9 Role of life and clinical experience in delivering CBT

Many physiotherapists acknowledged the role of life and clinical experience in facilitating the use of CBT in their practice. Life experience discussed by participants included their commitments in their families, having children, and many life responsibilities that make their life busy.

Physiotherapists emphasised that the experience of treating a wide range of different patients was an advantage in their clinical practice. They become able to distinguish between patients in regard to whom CBT may work for, or not.

*I think as I have become more experienced I have started to realise who is ready and who is not. And I often will go back to the physiotherapist who has one year of training in CBT to ask his advice if I don't think a patient is ready, and I will give him the reasons I think this, and then I feel much more comfortable in saying to a patient, you know and I suppose explaining that I am not sure that they are ready actually and I think that's been quite an eye opener for me over the years. The last couple of years of just really realising who you can help and who you can't. (T5)*

Physiotherapists also revealed that their perceptions of treatment have changed to be more holistic as they became more experienced.

*I do not think I incorporated any aspects [of CBT] into my practice until maybe about five years ago. I think of myself as a junior physiotherapist where I thought everything was black and white and you treated an ankle, you treated a knee, and certainly, with experience I have realised it is not quite so black and white. (T3)*

Physiotherapists felt that their own life experiences also added to this and that their understanding of patients improved as they experienced their own lives changing over time.

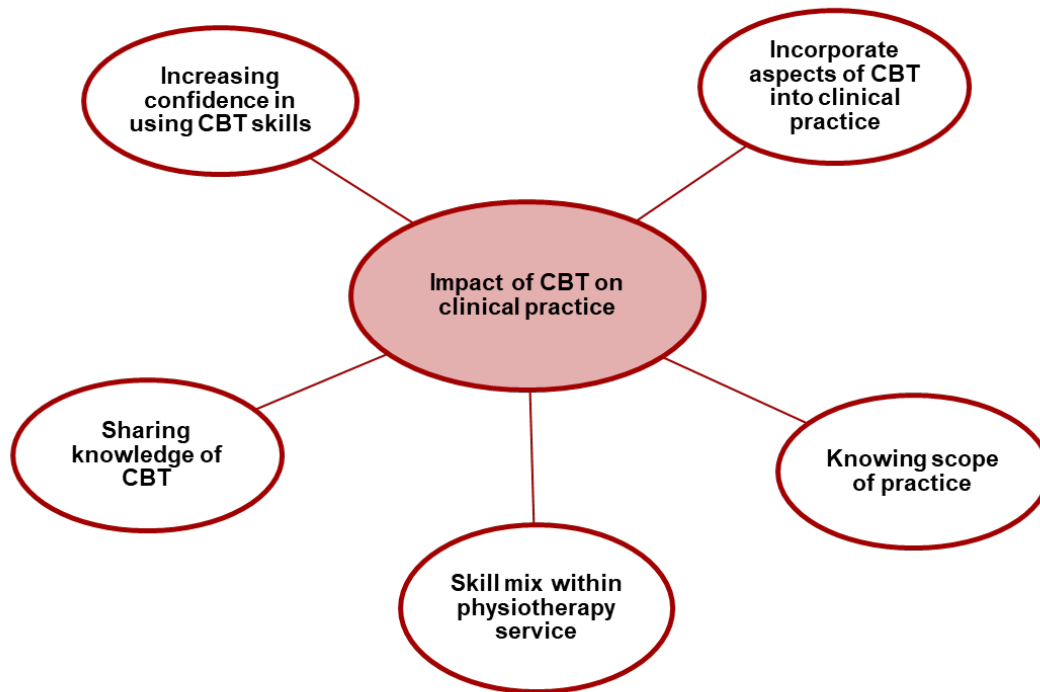
*I suppose lots of real life stuff as well, you know. As I have got older, it was not like when I was a junior physio and I did not understand why you cannot do exercises and why you are in pain all the time. And you learn, obviously, as you go through life experiences. You see lots of people from various backgrounds and various difficulties in their life, then you do tend to learn how those things can have an effect. (T12)*

*Experience is a big factor because I know that when I first graduated and I first started as a junior that I didn't have the experience. I think experience in life. I came in to study physio as a mature student, so I'd got life experience. But I'd not got the experience with how to deal with it in a verbal context towards the patient. So, once you'd had that experience, as well as the life experience, so you've got the clinical experience, I think it then stands you in better stead. (T13)*

To summarise, the information from participants that was grouped in this category was largely positive about CBT. Nonetheless, the same physiotherapists did raise some negative points, see category (6). I have looked for people who did not like it and did not use it and I did not find any of these. I looked hard to find people who hated it but I just could not find them.

#### **5.3.5. Category 5: Impact of the CBT Approach on Clinical Practice**

After talking about their training in CBT and their experience in delivering CBT, in this category the physiotherapists indicated how CBT had an effect in their clinical practice. These effects include incorporating aspects of CBT into clinical practice, knowing the scope of practice, mixing skills in the physiotherapy services, sharing knowledge of CBT, and increased confidence in using CBT skills (Figure 9). Managers of physiotherapy services also observed the effect of using CBT and therefore they were disposed to support physiotherapists to get training and to continue to use CBT.



**Figure 9: Codes related to impact of CBT on clinical practice**

### **5.3.5.1 Incorporate aspects of CBT into physiotherapy practice**

One of the physiotherapists who had formal training with CBT discussed that even though this training was intended to produce psychological wellbeing practitioners, not physiotherapists as such, they nonetheless were able to incorporate what they had learned into their physiotherapy practice.

*The actual course that we were trained on was specific to mental health. We were not physios when we were in that role; we have trained to be this new mental health professional, which is a psychological wellbeing practitioner. However, we are trying to make this more physio-specific now as we are back in practice. (T1)*

One physiotherapist confirmed that they adjusted the pure CBT techniques that they had learned so that they would fit more closely with their patients' needs in physiotherapy practice.

*I would not say I use the techniques that we used in CBT in its purest form; I rather adapt it to work with the physio. I use a lot of activity diaries with people. I use a lot of goal setting and actually looking at their activity diaries and relating that back to pacing and relating to getting them to look at their week and go, 'well actually look at how much you did here and how did you feel?' (T7)*

They commented that they used the CBT-based techniques and skills for chronic pain patients in physiotherapy practice.

*After that year [CBT training year], the past two years we've been working together [physiotherapists who have formal CBT training] to integrate these skills of CBT-based techniques back into physiotherapy practice for our chronic pain patients and more complex chronic pain patients. (T1)*

Physiotherapists revealed that the process of incorporating what they have learned in the training started earlier during the period of the training course itself. They used them mainly for chronic pain patients who suffered from anxiety and depression.

*I suppose even before I finished the course we were starting to incorporate elements of this low intensity CBT, so CBT-based techniques, into our work. So, I try to incorporate that into the work with the chronic pain patients, many of whom have anxiety and depression. (T2)*

One physiotherapist expressed that their experience in physiotherapy played a role in how they integrated CBT-based techniques in their practice.

*I think from experience I have found that I am actually doing a mixture, and I will be doing some CBT but then I will be bringing them some physio, some pain management. So, I am bringing in quite a few things. (T1)*



Some physiotherapists said that they incorporated it in daily practice as a matter of course and without necessarily identifying it explicitly to themselves as CBT-based practice.

*I kind of incorporate it [CBT-based techniques] now without even realising sometimes. It just becomes part of your practice. It almost feels like you are combining two heads, two different lots of skills and trying to kind of combine them. (T7)*

A manager of the physiotherapy services expressed that the CBT approach is an important aspect of chronic pain management.

*I think on the basis of the fact that I believe that every clinician should be using a form of CBT in every consultation, absolutely. With regards to the more persistent pain, then it is absolutely integral to the way that persistent pain patients are managed. (M2)*

Managers stated that integrating the CBT approach into physiotherapy practice as needed is a responsibility of physiotherapists.

*I think it is essential that therapists are applying some aspects of CBT, because I think in the vast majority of patients that we see in musculoskeletal practice, it's clear that their experience of pain is more than mechanical injury, and once you understand that their experience of pain is beyond physical mechanical damage, then surely as a therapist we have responsibility to be mindful of that, and thus to incorporate it into our physical approach to treatment. (M1)*

### **5.3.5.2 Knowing the scope of practice**

The role of the physiotherapist is to address mental attitudes towards injury and pain, and to show patients how to deal with the mental as well as physical issues, but it is not their role to treat pure or severe mental illness. Physiotherapists revealed that the CBT training taught them how to identify when patients are beyond scope of their practice.

*One aspect of our CBT is knowing your scope of practice. it is knowing when somebody has got a more severe and a more enduring mental health problem; it is recognising that. So the CBT training helped us to recognise when a patient is not within our scope of practice. We do get people with PTSD, people with personality disorder and bi-polar disorder, but the CBT that we provide probably isn't going to help them, and it's helpful that we can recognise that. It also helps us to recognise when physio isn't going to help our patients as well, where they may need more support. (T2)*

Similar to what was mentioned earlier in category two, therefore, physiotherapists can use the CBT approach only for patients who showed signs that psychological factors were impacting on their condition or those who had as what they termed 'mild to moderate mental health problems', such as depression, anxiety and worry.

*The course told you when it is most appropriate for you to work with which patients. It taught you about different mental health problems. But, as I say, it was mostly focused on the ones that we worked with, which was the mild to moderate stress, anxiety, depression and panic. (T1)*

The manager of the physiotherapy service explained that recognition of the scope of practice is the responsibility of each physiotherapist.

*Physiotherapists have to be identifying whether this is something that is within the scope of the staff within this service or whether there is a component, which is interfacing with their physical problem, which requires mental health services, which we do not provide within our service. (M2)*

Referring patients on to other services when their problems are beyond the scope of the physiotherapists' practice is one of the positive impacts of the CBT approach on physiotherapy practice. The quote below show what physiotherapists who are formally trained in the CBT approach do when they receive a patient whom they recognise to be beyond the scope of their practice.

*If somebody has quite severe mental health problems, then, actually, we're not trained to work with those people. So, that's where it might be more appropriate there to have the discussion with the patient if we're recognising that they might be struggling to cope with the pain and the things they're experiencing at the moment. Are they happy for us to speak to the GP regarding referring to a more specialist mental health service that could help to address those problems further? So I guess it's knowing our limitations with what we can work with. (T1)*

Examples of such cases where it is beyond the scope of practice of physiotherapy included post-traumatic stress disorder and personality disorder.

*People with PTSD [Post-traumatic stress disorder] and personality disorder in particular were difficult to help. It wasn't that the physio was a negative – it wouldn't make them worse I think; but it was out with our scope of practice from the mental health and the physio perspective sometimes to help people because their problems were too difficult for us (T2)*

On the other hand, the following two quotes shows what physiotherapists who are not formally trained in the CBT approach do if they do not feel qualified to deal with the impact of mental health on patient's pain experience. Some physiotherapists expressed that they seek advice and have a discussion with physiotherapists who are more experienced in managing the effect of the mental health on patient's condition.

*I am always conscious of not stepping over my boundary, around my professional boundary, and I think if I was to identify something that was a little bit out of my remit, that perhaps needed a little bit more psychological input, or..., I would probably ask one of the three physiotherapists who had one-year CBT training and maybe spend some time with them. I think, however, that if it was perhaps low-level anxiety and mood and maybe I would probably engage in some kind of advice on how to manage that. (T3)*

Some of them stated that they could update the GP.

*I'm very much a physio background and if I have patients who are struggling a lot with depression at the moment or anxiety or other mental health problems, I would normally have a discussion with another member of the team [IPT] who might have had a bit more*

*experience with working with these patients, or you can have a chat with the GP as well, inform the GP. (T4)*

### **5.3.5.3 Mix of skills in the physiotherapy service**

Some physiotherapists who were not formally trained in CBT emphasised the need for formal training.

*I think formal training of CBT would be helpful with most aspects of it. It just knows what the context of it really is. It's certainly for probably 30% maybe 40% of our patients, and they need that aspect of that, and certainly to be able to identify things that need to be done, rather than just going straight into normal physio and just trying to work on their physical fitness and things like that. So, I think it would be useful if it was more formally taught. (T12)*

Other physiotherapists from the same group, who are not formally trained, however, believed that qualifications are not necessary to apply the CBT approach, as long as they have gained enough knowledge about it from different resources within the service. They felt that the service does not need everyone to be formally trained.

*It is an intensive qualification. Number one: I do not think the NHS can afford to put everybody on it and I do not think – obviously, finance is an issue – but I do not think you need everybody to go on this training. We do have the knowledge shared through the in-service training. But I do not think there is a need for everybody to have, you know, a certain qualification. I think it depends on the individual. (T13)*

Managers of physiotherapy services similarly commented that you do not need everyone trained within the service, for many reasons. They believed that some staff need formal training, but many staff do not. What is important is having a mixture of skills within the service: some who are highly skilled in the CBT approach but others who are experienced in something else, for example, shoulder problems. Everyone, however, should know when to refer a patient to other people.

*Sending every single person on a formal course to be able to treat that high level of IPT category of patients would not be necessary. Otherwise, we would not need an integrated pain team; anybody would be treated by anybody. (M2)*

Managers believed that it is not possible for one physiotherapist to be expert in everything.

*It is that you cannot be expert in lots and lots and lots and lots and lots of different things. (M2)*

Other reasons for not sending everyone for formal training is the limited time resources that the physiotherapists have, and their own preferences for training in specific subjects.

*So, the staff who are highly trained in shoulders will not have the time or the inclination to be highly trained in persistent pain as well. There'll be one or two that cross both pathways. (M2)*

Furthermore, integrating what was been learned in the formal training back into physiotherapy was challenging.

*The staff who have done IAPT training have found it very difficult to integrate a model that is not around pain, necessarily, or musculoskeletal conditions, necessarily, into our service. And that is one of the key reasons why sending more people on a course like that is not necessarily the best way forwards, because they will also struggle to integrate that training into this context. (M2)*

In order to address these challenges, therefore, and save time and effort, it is preferable for the staff who are already experienced in adapting CBT into practice to share the process of integration instead of sending many people for a formal training.

*The staff who have done the training and integrated it into the service are the best people to share that knowledge with more people in this service, so that other physiotherapists do not have to work out how to do that integration of processes and principles. It has already been tailored to how it works well within our service. (M2)*

#### 5.3.5.4 Sharing knowledge of CBT approach

Physiotherapists, who had a formal CBT training, recognised the positive effect of integrating it into their practice for their chronic pain patients, and therefore transferred what they had been learned in the training course to their colleagues regardless of their experience. They shared this knowledge through in-service training and supervision sessions.

*The reason we did the training was to help our whole service and all our patients benefit from that. So not just about us working with all the patients. So, it's about spreading the knowledge as well and helping other physios use some of these techniques so that patients can benefit from it in practice. (T1)*

*We have been doing service trainings to help to share the knowledge to all of our colleagues. So, whether it be the newly trained physios right the way up to the really experienced physios, because we have not got that background of mental health expertise, so it's really helpful bringing it back into practice. (T1)*

The in-service training is a series of sessions on different subjects that run throughout the year as a source of development practice within the physiotherapy service.

*So perhaps ten sessions of in-service training a year, but that covers all the possible training issues you might want to do. So how much would we cover these sorts of things, probably once a year with chronic pain? So usually about two to three hours, but then they cover a number of topics and things at that point. Because we are quite spread out. (T11)*

Some physiotherapists who were not formally trained acknowledged that they received this knowledge in the in-service training, and they appreciated the effect of the supervision sessions they had with those who had formal training.

*I think we have the bit of training that we have had, although it has only been within our service it has been very good and just serves to open up your eyes and your mind to those sorts of ideas; of how you deal with those sorts of people [patients with both chronic low back pain and mental health]. So, that has been good. Then we have some of the physios here, they have been through formal training in CBT-based techniques. So, I've done supervision sessions with some of them. So, that has been helpful. (T11)*

One of the products of sharing knowledge about CBT was establishing a policy for suicide.

*We felt that we had done some really good training, introducing mental health issues to staff, particularly suicide risk, so that we now have a protocol in the department, because that was a problem we identified with staff: patients were expressing suicidal thoughts to physios in physio clinics, so we were able to support our staff by putting a policy in place for dealing with that. (T2)*

Physiotherapists who received in-service training in the CBT approach expressed that the training aimed at introducing chronic pain management and CBT-based techniques.

*There is sort of themes that run through the in-service training, and sort of chronic pain and managing chronic pain will be one of the themes that runs through the in-service training. I think a lot of it is directed towards being able to signpost patients, and certainly an awareness, an overall awareness, of these problems and sort of basic techniques of the CBT approach. (T8)*

Managers of physiotherapy services valued the effect of the CBT approach; therefore, they stated that they supported their staff by including CBT approach to the in-service training via the integrated pain team.

*CBT approaches are key to managing more patients. We use the integrated pain team several times a year to input into the training of the staff, the in-service training and that will be around consultation skills, which include CBT-type approaches. (M2)*

They believed that the physiotherapists who had formal training in the CBT approach, and who had already started integrating it into practice, are the best people to diffuse knowledge throughout the service.

*The staff who have done the training and integrated it into the service are the best people to share that knowledge with more people in this service, so that other physiotherapists do not have to work out how to do that integration of processes and principles. It has already been tailored to how it works well within our service. (M2)*

Moreover, the support of managers in terms of encouraging the dissemination of knowledge was not restricted to in-service training but also extended to offering physiotherapists opportunities to have a supervision session with those who had been formally trained.

*We support staff regularly, multiple staff. And the fact that we give staff, you know, four to six supervision sessions a year, of which they can go to IPT [integrated pain team] to shadow a clinic, to spend time with the IPT [integrated pain team] staff. So, we're supporting staff with regards to time, with regards to courses, in in-service training because it's key to a successful outcome with the patients. (M2)*

#### **5.3.5.5 Increasing confidence in using CBT skills**

Many physiotherapists who had not had formal training in CBT, but who had learned it from in-service training, expressed that they are more confident in using CBT approach. Their clinical reasoning had changed to be based now more on the biopsychosocial model rather than the biomedical one, and that is one of the emphases that CBT brings to the practice.

*The CBT approach, then, gives me a little bit more confidence to move over and think, is it a psychosocial issue? As a junior, I do not think you have that confidence, because you have got so much going on you've got to understand. Because you are looking for a mechanical problem, because you assume that everyone has come with a mechanical problem. And you're frustrated with yourself because you can't find a mechanical problem, or it doesn't fit within the realms of the suggested mechanical problem? (T13)*

A manager of physiotherapy services believed that confidence in using CBT skills contributed to practising it, and that this came with experience, in-service training and supervision sessions with physiotherapists who had received formal training.

*Confidence comes from training; that comes from experience. It comes from spending time with those staff who have developed those skills to a greater degree. So, we've had training sessions in in-service training. (M2)*



One physiotherapist believed that his confidence in using the CBT approach had improved a lot when as he became more experienced in life.

*As you get older, and I think age is a big thing. So, my life's experiences and understanding has helped me use these types of cognitive therapies. (T13)*

He commented further on the role that experience played in increasing the confidence in providing the CBT approach by comparing the confidence of new graduates to a more experienced physiotherapist.

*If physiotherapists were a new graduate out of university, they might not feel confident in applying that because they are more focused on trying to understand a mechanical problem. Because they are not confident in their own treatment techniques, maybe, and they are still learning their career. (T13)*

One of the physiotherapists who had the formal training of CBT acknowledged that her confidence in dealing with chronic pain patients who presented with 'mental health problems' such as depression, anxiety and worry had improved a lot.

*I can notice when people are depressed or anxious or a bit worried or, and I'm not scared to ask, we have this EQ5D that's got a question on depression and anxiety, and you always used to think, oh, they've ticked number 5, where do I go now? I would not have even broached the subject. Whereas I am not worried about that now. I am not scared to delve into people's emotions. CBT training has given me a lot more tools in my bag, which I can bring out. (T7)*

She appreciated the amount of skills that she acquired after the formal CBT training, which made her confident and ready for any cases within her scope of practice.

*I am much more confident in being able to deal with anything they kind of throw back at me. I just have that breadth to my skills, that I can just diversify and it is quite funny because some patients just go, you are a bit like a counsellor are not you? And I go, well actually yes I've had some training in that, I am incorporating it into my physio. It is so that we get you the best, we can move you on in the best way possible. (T7)*

### 5.3.6. Category 6: Perception of the Outcomes of CBT

This category relates to the process of treatment. It describes the issues raised by stakeholders in terms of the outcome of treatments that incorporate CBT. The category has three main codes, including physiotherapists' perspectives, patients' perspectives and managers' perspectives. (Figure 10).

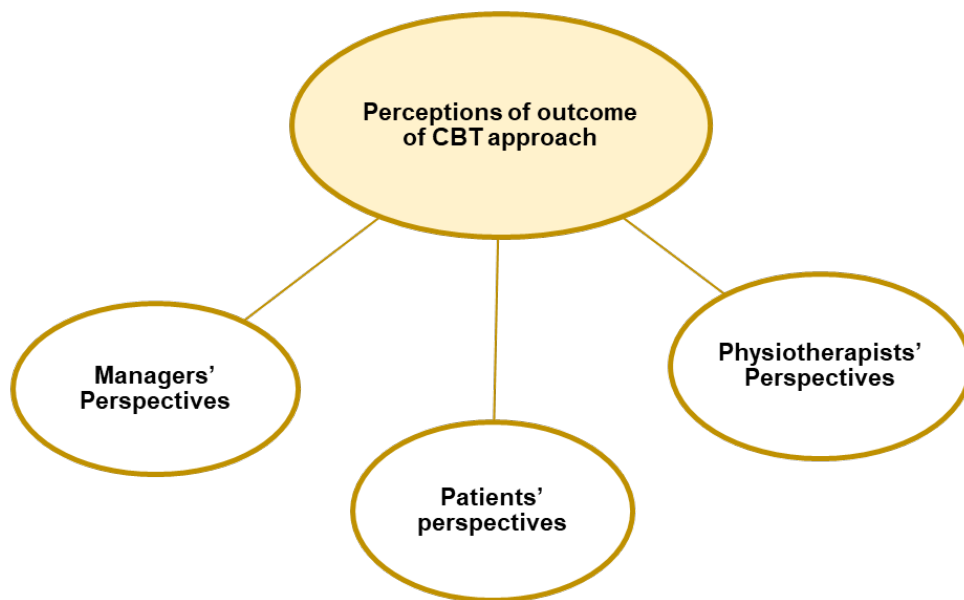


Figure 10: Codes related to perception of outcome of CBT approach

#### 5.3.6.1 Physiotherapists' Perspective

Physiotherapists discussed the importance of engaging the patients in the early stages of the treatment and linked that to good outcomes.

*If you can really get them engaged in the first session, and get them to see what you are trying to do for them, then that seems to have a better outcome, I think (T7)*

Physiotherapists believed that they could achieve good outcomes if patients understood and did what their therapist had told them during treatment sessions. Examples of good outcomes related to patients' engagement are listed in the following quote.

*Better outcomes are where they actually engage with the CBT and they take it on board. They set themselves goals and achieve them and learn how to pace, and learn how to problem solve for themselves, and learn how to manage their pain better, and learn how to, kind of, deal with the emotional trauma of having persistent pain. They just seem to manage better." (T7)*

Some physiotherapists indicated that the CBT approach provided them with new skills that allowed them to look at patients holistically. These skills led to improvements in the patients' condition.

*When it [CBT based techniques] works well I think it has been an eye opener, it has been a really revolutionary skill for us to have because some people just want to know what's wrong with them; they want to find out, and if everybody is only ever looking at it from the physical perspective they keep coming across this barrier that nobody can ever find what's wrong, nobody can find me anything that helps, but sometimes you just open up that well actually it's because you really, your mood is so low, we need to sort that out, and so sometimes we can help them with that, with information we can give them or they are really, really worrying about something and we can say yes, you are really worrying about something, we can look at that worry.(T2)*

Another physiotherapist said that improving mental health is just as important as physical health.

*I like the CBT approach because I think it gives me, I think often the way people would imagine a physiotherapist as they mobilise, they manipulate, they massage and they do these things, but actually you will end up being very dissatisfied as a physiotherapist if that's all you do: having other skills you can still make a really big difference to a patient's life and happiness and relationships and all of those things by helping them to understand what is going on. (T5)*

Next section is focusing on what physiotherapists reported about patients' perceptions on outcome. Many physiotherapists said that patients' positive feedback reflected the good outcomes of the CBT approach. The most frequent feedback from patients related to their appreciation of how their physiotherapist listened to their problems.

*Many patients will come in and say, 'thank you for listening', you [physiotherapist] might be the first person that has really taken an interest. (T3)*

*I've had a lot more patients who have been more, grateful is not the word; but just, it is kind of grateful... grateful that somebody actually sat and listened to them, took on board what their problem is, and tried to help them get to an end result. (T7)*

Some physiotherapists identified from patients' feedback how it is important for patients to be given enough time to talk about their problem as well as to be listened to.

*I do get some positive feedback in terms of patients saying that I think you have really listened to what I have had to say today which I think is really good, which I think is nice feedback to get. (T8)*

Patients verbally commented on the efficacy of the treatment as it helped them to control their worries.

*At the next session they come in and say yes, that has been sorted, that's been really helpful, I am not worried about that anymore, I have moved on from that, so we get [um] we notice that people are starting to recognise that they can control their own worries and they can control their own mood (T2)*

For example, one of the common worries is fear of movement to avoid pain. However, patients told physiotherapists that fear-avoidance of movement was reduced.

*I think I get good outcomes. I think people start to move more, move better. Because they have the combination of the exercises as well. They just start to move better, they are not as frightened to stretch because they know that stretching is okay, and they have*

*strengthened so they are stronger. They are less worried, and they might have back pain but it is not as bad and it does not affect them as much. (T6)*

Physiotherapists reported that patients felt more able to manage their pain as well.

*The patient tells us “Oh yes I’ve tried, you know what? I feel a bit better now, I pace myself now I don’t, you know before I was doing, I realise now that, you know, I was doing too much and I was trying to force through pain,” So maybe they’ve changed their behaviour and then they’ll say yes I feel that now I’m kind of, yes I can, I suppose I don’t want to use the word control but they feel that their pain’s less, you know, it’s more that they can manage it than before because of how they’ve changed their behaviour.(T9)*

CBT is not just about information giving or passive education. It is about sharing information through listening to understand a patient’s situation, interaction to clarify what is going on, discussion, interpretation of pain and agreeing treatment goals.

*Education was really nice for the patient because it sort of rang quite a lot of lightbulbs for that patient, in terms of thinking, you know, oh that’s me and that’s me, and I do that. (T12)*

*Patients will come back after the first session and go, that has just been amazing, that has been a revolution. I have read the pain toolkit, I understand everything in the pain toolkit, that is just me, and know exactly where it’s coming from. I know what to do now. And it’s almost like somebody switched a lightbulb on for them. (T7)*

Physiotherapists recognised from patients’ feedback how their explanation plays an important role in enlightening the patients about the actual cause of their problems. This explanation was appreciated by patients and considered by the physiotherapists to be a good outcome.

*Patients just go, thanks that is the first time that anyone is ever explained to me why I am having this problem. (T12)*

Different kind of dialogue and communication with clinician was acknowledged by patients and reported by physiotherapists to result in good outcomes.

*A lot of people just get to the end of the session and go, wow, nobody's ever talked to me about my pain like that before (T7).*

This section is about physiotherapist's job satisfaction after delivering CBT. This is slightly different to the job satisfaction mentioned in category (4), which was more about delivering a good service. Here job satisfaction refers to the satisfaction of achieving a good outcome. Physiotherapists reported that they felt satisfied because they got the patient better quickly. Whereas in category (4) they felt better equipped to meet patients' needs.

Physiotherapists identified that they enjoyed delivering the CBT approach. This helps physiotherapists to be satisfied with their level of practice.

*I think it [CBT based techniques and skills] is powerful. It does work, and I think it means that my job is more enjoyable. It gives you much more satisfaction I think as a therapist. The feedback I get from patients is better. (T5)*

*You're looking at a much broader- the whole patient – how they function at home, how much they do. So you see improvements in that way, and you don't get so disappointed when you don't see improvements in pain. Many people have pains that we can't take away. But they have lives that we can improve absolutely. It's nice to see a lot more people going to a gym, going exercising, going for walks, going shopping more, interacting more with their own families and things. So, it's rewarding from that point of view – that you see improvement. (T1)*

The entire focus of CBT approach is aiming to promote independent self-management.

*You often have to leave the patients to sort of find their own way after you have given them the skills, which is another reason why CBT is so important because if you do very manual based therapy, this is how you are going to treat them that's not going to give them long-term skills. Whereas actually the CBT approach looking at persistent pain, looking at how they sort of manage their understanding of that pain, how are they going to build on this then they can actually treat themselves? (T5)*

Some physiotherapists realised that applying CBT approach helps them to be able to discharge patients more quickly.

*I have had some really good results with patients by using more of that technique. I think I have had really good outcomes with patients in terms of discharges. (T4)*

Almost all the physiotherapists reported positive perspectives, however; one physiotherapist discussed that it is not possible to have a positive outcome with all patients.

*We are now moving towards this type of treatment [CBT approach], so we have to engage and use it within the realms of the treatment that we are doing but it does not mean that every patient is going to have a satisfactory outcome with every single clinician. And I don't think that's going to happen with anything that you do. It doesn't matter whatever you do because there are always going to be times where people don't really build up that rapport with the patient. (T13)*

He commented that even if a physiotherapist learned how to apply the CBT approach, it is not crucial that they treat all patients with it.

*I think everyone can do the CBT approach. I truly believe everybody can do something. However, I do not believe everybody can treat every patient. Because I know for sure that I will not be able to treat every patient who comes through the door. I can learn how to do things slightly differently and that is good if you learn from colleagues and peers. Whereas a colleague of mine might be better suited to treat another patient with these types of problems. (T13)*

Some physiotherapists were able to identify that they helped some patients by using the CBT approach. Due to their scope of practice, however, they were not able to help other patients.

*We identified that through the case studies I think we helped some people but we were identifying that people with PTSD and personality disorder in particular were difficult to help. It wasn't that the physio was a negative, it wouldn't make them worse I don't think, but it was out with our scope of practice from the mental health and the physio perspective, sometimes, to help people because their problems were too difficult for us. (T2)*

Physiotherapists believed that attributing improvement solely to the CBT approach is challenging since the treatment delivered to patient with chronic pain usually consist of many different techniques and therapies, not only one type of treatment.

*It's difficult to isolate that improvement is from CBT approach, because often any treatment with some of the chronic problems needs to be multi-faceted, so it is always, traditionally, it is going to be difficult to know which bit of it is the bit that made the difference. We do not use any outcome measures. We have the EQ5, which we use, at the beginning and at the end, sometimes. But within that we don't have any measures that may potentially give us an insight as to whether what we are saying to patients is maybe having that kind of impact. (T8)*

Although physiotherapists used some outcome measures in an effort to measure the improvement, these measures are not able distinguish the effects of the CBT approach from other aspects of their treatment. Because before and after measures are not able to document important elements of the treatment process.

*A lot of the time, we use outcome measures as well but sometimes it is just difficult to fit that in because it can be quite time consuming to use that, but we always have the EQ5 score. However, you have an outcome measure that says at the start and the end. You do not know what has happened in the middle, do you? So, and, yes, that is very much our job now. It is a fusion of different things. With all of my patients since I have come back from my course, there is not one patient where I have purely done CBT. There is always a mixture of things. (T1)*

### **5.3.6.2 Perspectives of patients**

Patients learned to have better control through understanding their reactions to pain.

*Since I have had the pain it has made me so down and negative, I could never see the way out, so since I have come here it has definitely upped my mind anyway. I am pleased with things now. I cannot get away from work, but it makes the other side of your life better. (P2)*



Another patient emphasised how understanding her problem is a very valuable outcome of this treatment.

*The understanding of my condition and my pain: that is what has been important to me. Because it is not visible, I think when you are in pain all the time it is not visible. (P6)*

Patients appreciated the way the physiotherapists interacted with them: providing explanation rather than instruction. Patients acknowledged how these alternative forms of treatment helped them because they were individualised for their needs.

*It is better for me because I haven't been told what to do, I want to know what to do but it wasn't like being instructed that this is what you must do. The current physiotherapist gave me alternatives that fit with what I am doing and how I feel and work round my life. (P3)*

Another patient also positively commented on the alternatives suggested by their physiotherapist.

*He [physiotherapist] suggests things. It, like, opens your mind to other things and you think 'Well give it a try, I've tried everything else' so I gave it a try and unbelievable it has been good for you (P2)*

Patients reported that they improved physically and mentally.

*My back is feeling better and I feel better about it. I get quite bad anxiety because of my body issues and that is a little bit better. (P3)*

Some patients indicated that they become more active compared to what they were.

*I could not even walk for 15 minutes without going, "I have to have a break". Now on the treadmill I can go for three and a half miles without stopping. (P4)*

CBT is focus on emphasising positivity and motivation. Patients respected the fact that their physiotherapists encouraged them to be positive and self-manage.

*I feel like I am a lot more positive. I wake up in the morning and I am like, rather than how it was before, I wake up in the morning going okay, you know what kind of a day is this?*

*Is this a bad back day or is this a good? I don't let that affect me because I know I have a goal. It really makes my mood really good and pushes away any like anxiety or whatever I might have towards my condition. Then when I am able to achieve it, it just makes you feel a lot better. (P4)*

Feeling hope was a positive product of the treatment that was reported by patients.

*I have left him [physiotherapist] a lot more positive today than what I did when I walked in. A lot more hopeful. (P11)*

Patients' agreed with physiotherapists that learning to pace themselves was one of the positive outcomes.

*I am sort of back in storing my energy and hopefully I will have enough available for tomorrow which, before, I would not have recognised that. I would have done it all and then wondered at the weekend why I cannot move. I am going to my niece's christening, and be thinking oh why do I feel terrible, but at least I know, I'm hopefully not going to feel terrible because I have paced myself for the rest of the week. (P10)*

Patients not only learned to pace themselves but also accept taking part in their treatment.

*I have met the smaller goals and not the ones that I did want to achieve for myself, and I am proud that I've met the small goals, whereas before I probably would have thought I'm wasting my time because I can't even do that, so you know, why I should go for less. (P10)*

Patients reported that their daily activities improved and that was a good outcome for them.

*It [daily activities] did not seem nothing were happening, and then all of a sudden everything started to click. Everything started to be working. I started being able to walk a bit more. I would exercise every time I go to the exercise group in the leisure centre. I got to the stage where I could not be bothered. After this physio, she did really good. (P5)*

Some patients indicated that they were able to re-establish their social life because of the treatment they received.

*I just feel happier doing things gradually. I have more of a, oh come on shall we go for food, shall we do this and that. I am more inclined now to say yes rather than no. So, that is the big improvement. (P6)*

*One patient acknowledged that his condition is not cured but he realised the positive effect that the physiotherapy offered.*

*Certainly, since I have been coming to this clinic [physiotherapy] I think it is very, very good for me, very good mentally and physically. It is the best; it is so unusual for me to be this happy in the morning but yes, it has been the best for a long time (P2) It is three weeks since I last came here [physiotherapy clinic] and from three weeks I am medically and physically better. Since I have seen him [physiotherapist] and he suggested other things as well, I am not cured by any means, but I certainly feel a lot better and happier in myself. (P2)*

In sum, almost all the patients who participated in this study, and received the CBT approach as part of their treatment, had positive perspectives on this type of treatment in physiotherapy. Physiotherapists' perspectives highlighted that the CBT approach is an interaction rather than instruction. CBT is about listening and understanding patients' problems. Patients were not totally cured but they were much better physically and mentally than before because they understood their conditions better and had learned self-management strategies.

### **5.3.6.3 Perspectives of Managers**

The managers of the physiotherapy services listed several positive perspectives that were similar to physiotherapists' perspectives. They acknowledged the positive outcome for patients of physiotherapy practice incorporating a CBT approach. Because CBT approach, manage patients' expectations and help them understand what their role is.

*I think it [CBT based techniques] adds value at the moment because the patient goes away from this episode of care, understanding that they may not have an improvement in their pain, but should go away managing their pain better. (M2)*

Managers believed that the CBT approach helped patients somehow to manage their conditions even though it could not cure them completely.

*So, if their condition cannot be fixed, that they go away more functional. That they can do more with the same level of pain. They have a greater understanding; they have less fear. So, for this episode of pain, this episode of care, that the patient is better as a result of it, if not physically better – better enabled. (M2)*

Managers indicated that equipping patients with self-management strategies through CBT approach could also have a positive outcome for the physiotherapy services since it could reduce the referral rate and waiting time to access the service.

*I think it [CBT based techniques] makes a difference in the future for the patient and the service. For patients with persistent pain, having the resources within themselves from the last episode of care to self-manage future flare-ups means that the referral rate back into the service may be better. Also, they [patients] won't have to wait a long time to do the right thing to improve their problem this time. (M2)*

Although the managers appreciated the outcome of using the CBT approach in physiotherapy for patients with CLBP, they indicated that they were not able to document that objectively.

*From my point of view having three people who then went to do formal training in CBT approaches has underpinned and improved and made stuff more specific and improved the quality, but in terms of*

*a change of the number of patients and how much better they were, I haven't been able to measure that. (M1)*

One manager discussed that while treatment incorporating CBT approach could result in negative outcomes, the reasons for these negative outcomes were not necessarily to do with the use of the CBT approach.

*I would expect therapists to be able to justify to me why they have used something in a situation. That would be the same for any technique. So, I would expect them to be able to say that's me. If somebody for example had decided to apply CBT principles alone on very weak evidence – so for example, I am just thinking worst case scenario – the initial assessment was so poor that they hadn't identified that there were red flags to act upon, then clearly that would be poor professional practice but it wouldn't be the application of the CBT that had been the problem, the problem would have been the clinical decision making, the lack of assessment and the reasoning that led to the application of the wrong pathway. (M1)*

The manager of physiotherapy services stated that they were not able to indicate that the improvement in patients' cases is particularly due to CBT approach because they had not had an audit yet.

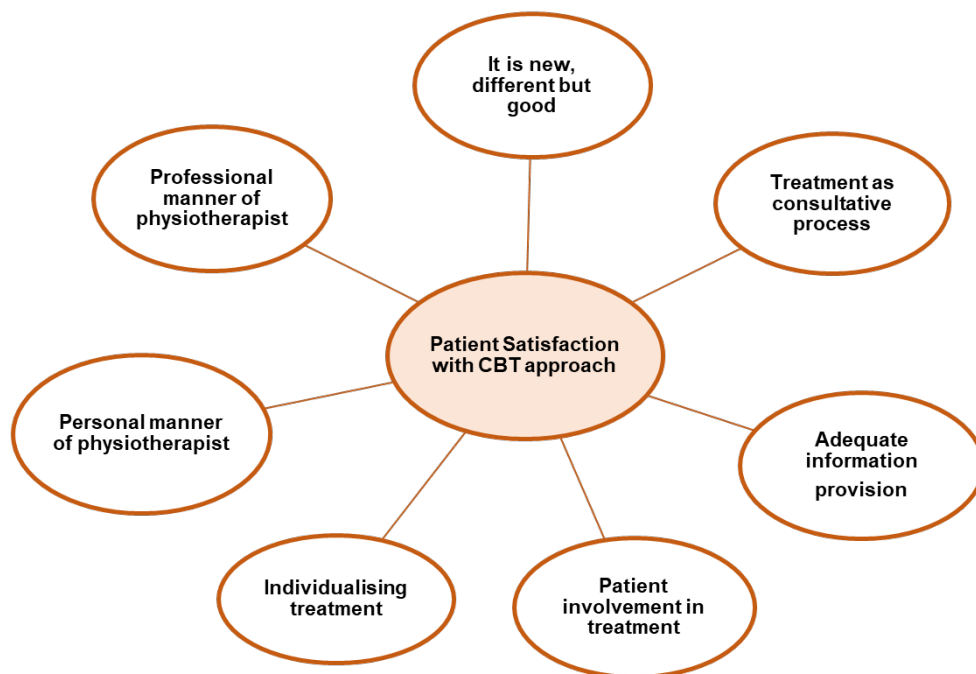
*I think there also needs to be a clear case for whether CBT approach changes the outcome or not, and at the moment we aren't collecting specific enough outcomes to be able to demonstrate that it is the thing that really makes a difference, so if it is multi-factorial treatment and it's multi-factorial how the patient responds to it, we don't have the evidence. (M1)*

*We get feedback from patients who have been discharged from the service. Well, 90% of the responders gave a positive feedback with- about the service. And the comments are things like explained everything to me. I feel like I was treated as a person, not just as a number. (M2)*

### **5.3.7. Category 7: Patient Satisfaction with CBT**

This category describes the patients' views regarding the process of treatment they received, which included CBT based techniques. In contrast to the previous category, which described the outcome

of treatment, this category reflects patients' perspectives on the quality and process of the episode of treatment. The aspects that patients either appreciated or criticised include: 'it is new, different but good'; adequate information provision through education and teaching; involvement in the treatment; treatment as a consultative process; individualising treatment; the professional manner of the physiotherapists, and the personal manner of the physiotherapists (Figure 11). Although this section focused on patients' satisfaction with CBT approach, it also describes the barriers that patients encountered when applying their treatment at home.



## Figure 11: Codes related to patient satisfaction

### 5.3.7.1 It is new and different, but good

Some patients commented that they had not expected to receive exercises such as breathing exercises for lower back pain.

*I did not think it [physiotherapy] would just be talking, advice, guidance and a little bit of movement and that is not what I thought it would be. (P6)*

*To be quite honest, he's [physiotherapist] suggested some things of which I would never have thought of really. You know, different types of exercises. Well, most of the exercises he's suggested are new to me, I mean for lower back pain he has suggested a breathing exercise. It's different to what I've had before. (P1)*

Many patients stated that the physiotherapy session they received was aiming to pace them using only relaxation exercises through the session.

*I mean it [physiotherapist's suggestion] comes down to certain exercises, pacing myself, it's all sort of relaxation." (P7)*

Patients acknowledged that these different and new treatments, including talking, advice and guidance, were good and helpful and exceeded their expectations regarding physiotherapy content.

*I did not think it [physiotherapy] would just be talking, advice, guidance and a little bit of movement and that is not what I thought it would be. It is different in a good way. It is a form of treatment because it is help and it is advice and it is just helping you look at things a different way. (P6)*

One patient, who had long experience of living with lower back pain over many years, highlighted the difference in aim and content of physiotherapy between before and now. He realised that

physiotherapy treatment for CLBP is now focusing more on equipping patients with skills of self-management rather than being hands on.

*Years ago, I had the idea that physiotherapists were very hands on and they would actually do something physically, but I realise now that every physiotherapist I've ever seen, it's more telling you what you can do for yourself. It is all more or less giving you the tools to do it for yourself. That seems to be the way. (P7)*

Some patients like this kind of new and different treatment, and link this to improved adherence to treatment sessions. Many patients reported being excited about and feeling happy to attend their sessions.

*I felt like there was something different, why am I, this is the first time ever I have gone to a physiotherapist and been so happy. (P4)*

#### **5.3.7.2 Treatment as a consultative process**

The amount of the consultation with patients was another dimension of the treatment that was recognised and reported by patients. Some patients appreciated the level of consultation they had with the physiotherapist, which includes conversation, suggestions and advice. They commented that such consultation leads to a good therapeutic relationship.

*We have a chat, I suggest things, and he advises me. We do that every time we come up. I think it is brilliant relationship (P1)*

One patient positively described a particular physiotherapist as being having an interactive consulting style; suggesting treatments responsive to patients' needs, and not being prescriptive.

*He is not dictatorial; he just suggests things while you are sat [in the physiotherapy clinic] (P2)*



Talking patients through their problems in order to ease them was reported by many patients to be the main aspect of the consultative treatment that satisfies them. Some of them found that this acted as an encouragement to do their exercises and adhere to treatment.

*[The physiotherapist] talked to me and encouraged me to carry on with exercises. I felt really down and she [physiotherapist] talked me through it and she did all; she was great. (P5)*

Some patients discussed the positive difference they noticed in their current treatment, namely talking through each of the exercises that was specifically provided compared to the passive physical treatment they had received in a private clinic.

*The private physio is more the actual physical treatment. Whereas [the physiotherapy incorporating CBT], is identifying and giving specific areas specific exercises but talking through it a lot. It has helped. (P6)*

Many patients highlighted and valued the fact that the treatment lacked physical ‘hands on’ treatment, with this being replaced by talking therapy aimed at teaching patients long-term skills of self-management through strategies such as exercise, a pain toolkit and providing different online resources.

*She [the physiotherapist] did not do anything hands on. There was not really anything hands on at all. It was all talking about it really. I think she was trying to sort of equip me with the exercises and the way of thinking about these things. She gave me that, the pain toolkit, and there is a web page that I have read, which is all very good. (P7)*

### **5.3.7.3 Adequate information provision**

Another experience that patients noted in respect to the process of receiving treatment, was the provision of adequate information through teaching and explaining. Patients require adequate,

satisfying amounts of information from physiotherapists in order to understand their problem, their role in the treatment process, the treatment itself, and the prognosis for their problem. One patient appreciated how their physiotherapist explained the problem she had using the concept of the cycle of pain. This helped the patient to understand her problem and her role in the treatment, leading her to make a positive change in her condition.

*He [physiotherapist] has helped me to understand the cycle of pain. He [physiotherapist] has really helped me with changing that cycle, accepting that the pain is going to come, and accepting how we can shift the balance back over from it being severe because we are at a low level. Whereas the more we strengthen, improve, and get that stability, then the pain doesn't seem so bad. The body is stronger so it can handle it more. Then you don't feel so tired and run down. So, the mental attitude appears better. (P6)*

Another patient was satisfied with the information that she initially received, because this explained the prognosis for her condition, and fact that any improvement would not be quick, or 'overnight', but would take a long period of time.

*She [physiotherapist] used to say, it is not going to happen overnight. It might take 2 years and it might take 18 months. It is roughly about, nearly 12 months now since I started having it [physiotherapy with CBT approach]. I am not fantastically great, but I am a lot better than what I was. (P5)*

Some patients were satisfied with the detailed explanation given about the process of treatment compared to just an instructed treatment.

*He explains, he does not just say do that and do that. He will go into the detail of why. (P1)*

Other patients positively expressed that their physiotherapists demonstrated everything in front of them to ensure that they could do it correctly and thus verifying that they would be able to carry on and do it at home.

*Everything that they [physiotherapist] told you to do; they do it so that you can do it at home. (P9)*

Many patients commented that the teaching and explanation they received from physiotherapists helped them understand their role in their care.

*I can understand what he [physiotherapist] wanted me to do, he explained everything perfectly and showed me everything that I need to do. (P11)*

An example of how explanation is helping patients to understand their treatment, and their role in that treatment, is that they realise simple things such as trying to do a little is better than not doing anything, which is important for their progress.

*She [physiotherapist] has made me realise that even though I might only go to the gym once a week because I am not feeling up to going any more than that, that one visit is much better than not going at all (P10)*

Patients reported that they learned from physiotherapists to set themselves small achievable goals that meet their self-help needs.

*She [physiotherapist] taught me to make small goals, make small steps and not be disappointed if I don't sort of meet them, which I have done. (P10)*

Patients were satisfied not only with the explanation and teaching during the episode of treatment, but also the signposting to different resources such as leaflets on treatments and online resources.

*He [physiotherapist] gave me some leaflets on relaxation and pain management as well. And he gave me some websites to look at. (P3)*

#### **5.3.7.4 Patient Involvement in treatment**

One of the dimensions of satisfaction mentioned by patients is their active involvement in their own treatment.

*He was really good, talked me through [patient's problem], and got me involved in my own treatment. It's really better. (P3)*

Some patients were positive about their active involvement in setting their treatment plans and goals.

*We have a conversation, we agree plans and agree goals together. It really helps a lot. (P1)*

Patients expressed that involving them in managing their problems made them more satisfied with the treatment as it allied with their individual needs and abilities

*He [physiotherapist] does not tell me, "Okay do them." He will go through them with me, see how I feel. We will do like a proper set and then he'll say, "How does that feel?" and then, you know, reading that information back to me [allows me to] take it on board and then that's how the goal was kind of [met]: "Okay this is good, you're going to do this next time." (P4)*

#### **5.3.7.5 Individualising treatment**

Patients appreciated how physiotherapists individualised their treatment to fit their individual needs.

*I expected to be doing some exercises but he [physiotherapist] gave me something different because of what was wrong, so he sort of adapted it for me. Which I really appreciated because I find it hard to do physical exercise so just relaxing and breathing was different to what I expected from physio. (P3)*

Some patients acknowledged that physiotherapists discuss their individual needs with them in order to provide them with the optimal treatment that reflects these particular needs.

*I also told him [physiotherapist] there were some things that I was not comfortable with doing and then he kind of like talked with me and kind of suggested alternative things that we could do (P4)*

One patient positively reported how the prescribed treatment she received, namely relaxation techniques, targeted her particular needs.

*I was quite good at breathing exercises and things like that. And I have had, like, relaxation techniques really. It is more targeted for someone like me I think. (P11)*

#### **5.3.7.6 The personal manner of physiotherapists**

Patients expressed their satisfaction with the attitude and personal characteristics of physiotherapists during the episode of treatment. They stated many different characteristics, including being a good listener, being friendly, empathetic, respectful, providing support, reassurance, encouragement and motivation, and understanding patients' problems.

Being a good listener was the personal characteristic of physiotherapists most frequently reported by patients. Some patients discussed their bad experience with doctors in relation to listening and compared this with their current experience with physiotherapists. One patient appreciated that his physiotherapist listened to his problems and complaints, repeating that 'she listened' three times in his answer.

*She was just so nice and she listened to me. That is a thing. Whereas talking to the doctor and he is messing about doing something, he is probably too busy, and he has a load of patients. But she listened and, whatever I said, she listened, that's the main thing, she listened. (P5)*

One patient valued the fact that she had sufficient time with the physiotherapist, during which she was listened to and did not feel rushed.

*I feel like when I first come in he [physiotherapist] kind of takes the time to kind of, it is not rushed; like he will listen to me. He takes the time to listen to what I've been doing, how I am feeling (P4)*

Another patient highlighted the benefit of having someone else, such as the physiotherapist, listening to her routine of life and commenting on her performance in an effort to improve her activity.

*I think you do set yourself your own goals and you try and achieve them, and you feel a failure if you don't get them, but someone else listening to your daily routine of life can step aside and realise, "Well, that's what you are doing wrong, and that's what you are doing wrong," whereas you won't realise that because you have been able to do that in the past and can't understand, can't grasp, why you can't do it now. (P10)*

Another patient acknowledged that her physiotherapist not only listened but also heard her. She emphasised the benefit that hearing added to listening in that paying close attention leads to a good response.

*He [physiotherapist] actually listens. So, it makes a difference, because you can listen to someone and not hear what they are saying. Whereas he listened, and he heard, and he acted on what he thought I needed, so that was really good. (P3)*

Patients liked the sympathetic and the emotionally supportive attitude of physiotherapist. Empathy cannot serve patients effectively if it is stand-alone without other skills such as listening and understanding patient problems. It was the combination of these characteristics that made patients feel they were being dealt with in a sympathetic and respectful manner.

*Well she [physiotherapist] was very empathetic. She was, she had a lot more empathy for what I was saying to her, and took on board what I was saying. Whereas other physiotherapists, they just seemed to, they almost dismissed what I was saying. (P7)*

Patients emphasised the positive impact on their condition of their physiotherapists' emotional support.

*When you are unwell, it does not affect just physically, it really affects you emotionally, and I think having that extra emotional support makes all the difference. (P4)*

Some patients appreciated the support provided by physiotherapists in allowing them to revisit the clinic in the event that they needed anything.

*He said just contact me on a Friday when I am here all day, don't worry about it. I am here every Friday if you need to see me. So that's really, really helpful. Its knowing somebody's going to be there for you. (P11)*

Another aspect of the support provided by physiotherapists that was also very much appreciated by patients was motivation and encouragement.

*I looked forward to going, to see her [physiotherapist]. She gave me motivation and encouragement. (P5)*

Most of the patients stated that they require the kind of reassurance that the physiotherapists provided in order to increase their confidence to carry on with their treatment. Reassurance helped patients to calm down and stop worrying about their role in the treatment.

*He [physiotherapist] knows how to make me feel calm like I am not panicking. Worrying how am I going to do this, how am I going to do that? Is it going to get better? You know he's always like comforting me saying it is going to get better, you are going to get better and he's just such a, like, a really calm person. (P11)*

Patients liked the respectful attitude of the physiotherapists and their ability to accept the excuses when they were not doing their exercises.

*I was treated with respect. She never went mad if I said I hadn't done this or when I said I missed some exercises once or when I was feeling doubtful. She said don't worry. She made me feel good. (P5)*

Patients commented positively on the friendly attitude of the physiotherapists. They accepted and understood patients' problems, which put the patients at ease and helped them to relax during the episode of treatment.

*She had a very friendly manner. She [physiotherapist] was just accepting what I was telling her, and we sort of talked about it in a sort of a 'to and fro' way. I really do think that this physiotherapist was probably the best physiotherapist I have seen personally, because I think she had, just had a better attitude. (P7)*

Patients expressed that physiotherapists had the ability to put them at ease, and that this improved the therapeutic relationship. One of them felt that her physiotherapist was like a daughter and they were at home.

*She's [physiotherapist] got a really good manner, really good manner. She was like, as though she was my daughter to be honest. She made me feel really relaxed, and that helped me. I felt at home. (P5)*

### **5.3.7.7 The professional manner of the physiotherapists**

Patients reported and appreciated some skills related to the professional manner of their physiotherapists during the process of assessment and treatment, including their knowledge base and thoroughness.



*There is knowledge there, the listening skills, knowing when to talk over me and when to shush and let me talk because I think that is important. Sometimes you do need to listen, but I think he [physiotherapist] has been very good at that. He's a very good listener, he has got some good advice, and support tips. So, I've been more than happy. (P6)*

Patients commented on the physiotherapists' ability to see when patients set unrealistic goals and how they thoroughly used their skills to reset an achievable small goal.

*He [physiotherapist] asked me, what do you like doing? And then he kind of like advised me and gave me sort of ideas as to, like, you know you shouldn't think of "Well I need to lose weight but how can I start getting more active?" He was, like, "Don't think about the weight loss, think about how can I be active..." You know, like sometimes when you have to lose weight you see the big number. He makes small goals. He told me to go walking, swimming, and just approach the weight loss in a way where it is not all about the weight loss, it is about getting more active (P4)*

#### **5.3.7.8 Patients' barriers in accomplishing treatment**

Although patients reported their satisfaction with the treatment they received, they also mentioned the barriers they faced in accomplishing their treatment at home when they are alone. Some patients talked about the difficulty they experienced in terms of their ability actually to do what they had learned from their physiotherapists at home.

Patients reported that they need their family member or partner to help them do their exercises at home but not all patients however have help at home. Some patients live alone at home.

*Well it is not [breathing exercise] easier at home, because my wife helps me do them. (P1)*

Some patients expressed that, sometimes, their barrier to doing their exercises at home is their memory as they are aging and have a high tendency to forget.

*Because I am getting a bit older, yes you do tend to forget things, but I basically took a lot on board about what he [physiotherapist] said and tried to do it at home. (P2)*

Many patients reported that lack of time (Quotes P2, P3 and P10) due to their different commitments, for example caring for his wife who is in a wheelchair (quote P7), is a big barrier to doing their exercise at home. One of them tried to strike a balance between work and personal life so as to be able to do their exercise.

*I can't always do it because I work; it is always work/life balance, but so far everything is great, you know. (P2)*

*He [physiotherapist] did suggest to try swimming but I haven't got time. (P3)*

*The only problem or difficulty that I have is finding the time to do it. (P10)*

*I'm a full-time carer to my wife, who's in a wheelchair. I'm a full-time carer as well as having a bad back. So I sort of fit in relaxation whenever I can. (P7)*

Other patients expressed that self-motivation was an issue that challenging their ability to complete exercises at home. It reduces their confidence, as become concerned about the accuracy of the exercises and their safety.

*Maybe there's no motivation at home, maybe I'm not sure if I'm doing it right or wrong and partly safety (P8)*

One patient preferred doing these exercises with a group in a class rather than doing them at home alone.

*"I'm one of those people who are not good at motivating myself. If I am in class and everybody is doing it, I can do it. But I couldn't be at home and do it myself. (P5)*

Many patients found difficulty in doing relaxation exercises, as they were self-conscious about counting their breathing.

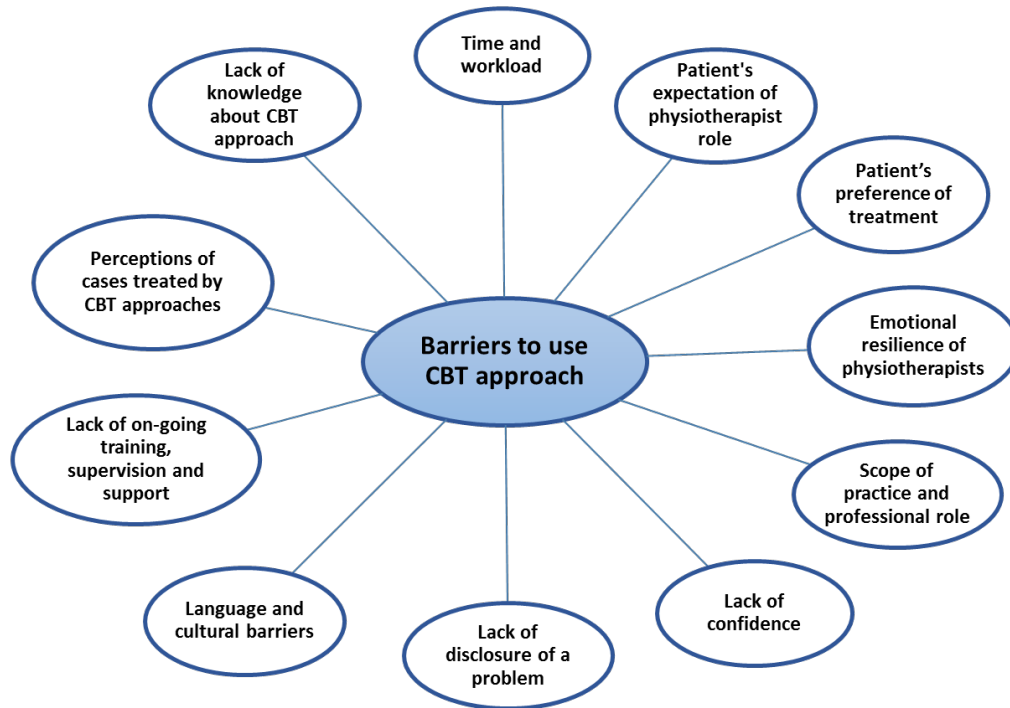
*We went through relaxation techniques, which I found really difficult, because I couldn't relax to the extent that I should be relaxing to, because I was concentrating on counting and my breathing. I sort of relaxed as in, yes, I was laid there, and it was dark, and I was feeling like the stress had gone away, but the mind wasn't clear because I was still concentrating on the number of times I was needing to breathe and breathe in and out. I couldn't switch off because I was conscious (P10)*

Some patients reported that the public image about them doing their breathing exercises acts as a barrier for them to do their exercises in public places.

*You can't be walking about in public doing this sort of thing [breathing exercise], because people think you're mad. That's how I feel like. I think it's a bit self-conscious (P9)*

### **5.3.8 Category 8: Barriers to Using the CBT Approach**

Numerous different barriers to the use of CBT in physiotherapy practice for CLBP were identified (Figure 12). These barriers were identified from clinicians' perspectives: time and workload, patient's expectation of physiotherapist role, patient's preference in respect to treatment, lack of in-depth knowledge of the CBT approach, lack of CBT knowledge in the initial training, lack of on-going training and supervision and support, lack of confidence, scope of practice and professional role, language and cultural barriers, nondisclosure of the problem, and the emotional resilience of physiotherapist. An in-depth explanation of these barriers is provided below.



**Figure 12: Codes related to the barriers to using the CBT approach**

### **5.3.8.1 Time and workload**

The most frequently barrier reported by participants was time. They mentioned that using the CBT approach with chronic pain patients is considered time consuming. This is because therapists need time to listen to the patient and then to talk to them about their pain experience, as well as providing the treatment. Also, some participants explained that these types of patients require more time to engage them to treatment.

The short duration of the treatment session (20-30 minutes) was reported by many physiotherapists to be one of the time-related issues that make it challenging for them to use the CBT-based technique.

*Because I've not been formally trained, then I don't think I am formally delivering it but I am still taking someone whose beliefs are wrong and trying to reassure them that, so I am not telling them their thoughts are wrong and I am not getting them to challenge the thought but I am giving them the positive of what I want them to believe. Because I've got a 20-minute appointment but I haven't got time to go into thoughts and feelings, analysing, looking for evidence, none of that (T6)*

Many physiotherapists described that they suffer from the short session length and they had made this clear to the manager of the service as it is one of the barriers to delivering CBT-based techniques. They are trained and encouraged to incorporate CBT approaches which is time demanding into their practice but at the same time there is no change in the length of the treatment session.

*We've had a lot of discussion with the managers to help them understand. We probably need a lot more time in our appointments. We're still getting the same length slot to do a review slot to do essentially two jobs [physical and psychological] and work with more complex patients. (T1)*

Workload is reported by physiotherapists to be a barrier to the use of CBT. Because of the workload, the physiotherapists found it difficult to apply what they thought to be suitable for the patients. This is because there are a lot of patients and limited staff resources.

*Because of our workloads, we wouldn't be able to give people really what we probably felt we'd like to do. (T2)*

*There's lots of patients and not enough physiotherapists I guess. (T11)*

Physiotherapists felt that CBT is more time consuming than usual treatment.

*It is not an easy thing to apply CBT. It is certainly time consuming; I think it is the biggest problem. (T2)*

They indicated that chronic pain patients may take more time regardless of whether CBT is used or not.

*I think the time factor is probably the biggest challenge because these patients [with chronic pain] are time consuming, you can't get away from it, that it is labour intensive. (T2)*

Some physiotherapists highlighted that when using CBT, chronic pain patients are more time consuming than patients with other sorts of conditions.

*The chronic pain patients take a long time anyway to deal with. Sometimes they need to have that extra time to be listened to, and they take time to treat. (T7)*

The number of follow-ups and the long time frame to follow up with patients were issues highlighted by physiotherapists that were related to the limited resources of time. These issues lead to many consequences. The *first consequence* is a constant pressure from services to discharge patients because of the limited number of follow-ups, while the physiotherapist prefers to see them again.

*Another challenge is the number of follow ups that sort of, that we need to keep on top of our waiting times at the end of the day and trying to get patients seen, so there is a constant pressure to discharge patients. (T5)*

This also related to a *secondary consequence* of overloading a patient with too much information and things to do in the first session.

*I know I can't see people for quite a few weeks in advance. I want to get a lot done in one session. I want to send them away with something to think about, something to get started with. (T7)*

This is to ensure that patients are ready to be discharged with long-term skills that enable them to manage their pain. Physiotherapists believed that they do this as a solution to the perceived problem of the long-time frame entailed in booking a follow up for the patient.

*Because obviously it's important to try and get patients on board with these types of things. It's like, well I'll see you once and then I'll see you again in a month and a half. You know you can lose quite a lot of people during that sort of stage (T12)*

The difficulties in being able to schedule regular follow up sessions for patients increases the risk of losing patients during the follow-up stage.

*The biggest problem for us I think is getting people in regularly. We struggle to see people the next week which ideally, we would want to do, so unfortunately it is a problem. so we try to get that, I try to get that good in first session, get as much information in that first session and knowing that they are going to have several weeks before I can see them again (T2).*

*Sort of poor continuity really in being able to see patients again in sort of 4 or 5 weeks sometimes is too long a timeframe to follow things up. I certainly think the distance between the appointments is probably more of a problem than the appointment time itself. (T8)*

One physiotherapist stated that the idea of trying to get as much information to the patient as possible in the first visit makes her feel guilty. This is maybe because patients as mentioned in previous category (see section 5.3.7) encounter difficulty in applying what they have learned in physiotherapy at home. Sometimes, they become concerned about the accuracy of for example the exercise and its safety.

*Sometimes, I might be guilty of giving them too much, of overdoing it. So, I suppose, so time is my main challenge. (T7)*

Another physiotherapist believed that doing that much in a short time led him to feel exhausted and rushed.

*You end up feeling rushed and drained. (T2)*

The third consequence is delaying the delivery of intervention due to the long-time frame to follow up, which is about a month or more, and also because of the short duration of each session. For instance, physiotherapist expressed that patients are sometimes booked into a 'normal musculoskeletal clinic' when they should be booked into a different one which is for chronic pain patients. Therefore, they need to reassign the patient to the chronic pain clinic.

*I think time would be the other, because often I will get some patients in my normal clinic which is considered my musculoskeletal clinic, who are pain patients, you know, and I don't get the same time designated for them, so I think that might be a barrier, and what I would end up doing is maybe thinking about revisiting it [CBT approach] next time I see them and then find them an appropriate slot, but that just delays their intervention, because I might not be able to see them for about six weeks, so I think time is a factor. (T3)*

### **5.3.8.2 Patient's expectation of the physiotherapist's role**

Physiotherapists reported that patient's expectation of what should they receive from physiotherapy treatment is one of the barriers to use CBT. Patients did not expect that the physiotherapist can address their psychological state that might be contributing to their pain , and this may cause them not to engage with the treatment.



*Often patients have a very specific expectation of the physio, and they might not expect to be addressing the psychological side of things and sometimes patients don't want to go there and address things. (T1)*

*But I don't feel that I need to go into that degree [of structured CBT] in our clinics. We haven't got time and the patients don't always like to... we are physiotherapists; we are not mental health workers. ... sometimes they wouldn't want you to talk to them as if it was a mental health thing anyway. (T6)*

If patients have received mechanical interventions, exercise, manual therapy in the past then they may not be expecting talking or any other CBT-based techniques as a physiotherapy treatment.

*Perhaps they're [patient] not expecting that that [CBT-based technique e.g., talking] is the first thing that they'll receive when they come to physiotherapy. Because of their past experience, So, previously they might have come and had manual therapy; they might have had hands-on treatment which they may call massage. They may be expecting exercises. (M2)*

Patients' expectations may lead them to misunderstand the physiotherapy treatment they had received.

*I have heard many times people say oh I didn't have physio, they [physiotherapists] were just talking, so from physio they [patients] expect something mechanical. (T10)*

Many physiotherapists discussed the importance of explaining the intervention to patients so that they can understand the reason why they are receiving these kinds of psychological treatment.

*I think before you use CBT-based technique, it's really important to explain what it is. (T1)*

Patients might think that they had not received physiotherapy, and this might cause dissatisfaction with what the physiotherapist did at that session.

*As long as the patient understands why that [talking about their mental health problem] is because otherwise you will get dissatisfaction from a patient, they will say the physiotherapist didn't do anything, so you have not won. So, you do need to keep explaining that [talking is part of intervention] (T5)*

### **5.3.8.3 Patients' treatments preferences**

The physiotherapist's selection of treatment is strongly restricted by the patient's preferences in respect to treatment. Patients often like one treatment better than another and that may disappoint a physiotherapist and prevent them from applying the CBT-based approach, even when they consider it to be the optimal treatment for this patient for example.

*The other big thing that I found, because I was very excited to get CBT skills and use them in practice. But, at the end of the day, the patients have got their own agenda a lot of the time, haven't they? And obviously a patient will come in and you might have a plan one session and the patient comes in and they decide they don't want to do that anymore and they want to work on something differently and so a lot of it is swayed by *obviously what the patient wants. The preference of the patient. (T1)**

Many patients looking for a physical cure from physiotherapy and they did not even want to think about or try the new treatment being delivered which is CBT approach.

*You get quite a lot of resistance from people who feel that they are looking for a physical cure still, so that would probably be our biggest problem, is people won't have to think about it [CBT-based techniques]. (T2)*

Many physiotherapists described how the patient desirability of one treatment is influenced their clinical decision-making. Physiotherapists are agreeing that some patients cannot be helped with CBT.

*It is patient preference that they don't want to have to think about it [CBT-based techniques] yet, even though it may say they engage initially, they have difficulty in*

*engaging. we just have to agree that we can't help them, that is one of the hardest things to do is just agreeing that we just can't help this at the minute. (T2)*

Some physiotherapists revealed that they are pursuing a physical route for some patients even if it is not the best option.

*Sometimes we have to go down the more physical route for some patients. People often prefer to go down that route, even though we don't feel it is necessarily the best thing for them. It might not be inappropriate, but it might be the second best thing if they choose not to engage with the psychological things. (T2)*

#### **5.3.8.4 Lack of in-depth Knowledge of the CBT approach**

Physiotherapists talked about lack of in-depth knowledge includes many things: the background knowledge of mental health and the content of the CBT approach, the skills required to deliver it and assess the patient and knowledge around patient suitability.

Physiotherapists expressed that they do have a basic knowledge of CBT and they want more in-depth knowledge.

*I use the techniques and then I am thinking I don't know that much about it though really. So I think you know I really should go and get more training about it or read more about it. (T11)*

Physiotherapists who had formal training in CBT-based techniques as a postgraduate programme, discussed that they tried to increase awareness within physiotherapy services about the CBT approach by providing a good amount of training. They shared the knowledge they had acquired in their postgraduate courses about mental health with their colleagues in many sessions of in-service training. They did this in order to educate people to ensure that appropriate referrals are

made to trained physiotherapist. Also, to help other physiotherapists to start to use some of these techniques so that patients can benefit from it in practice.

*So, we've had to do a lot of training around that [lack of understanding of CBT-based techniques] about what our skills are and what our role is. You know? What sort of patients we can work with? Because they're referring patients to us. (T1)*

*We've been doing service trainings to help to share the knowledge to all of our colleagues. So, whether it be the newly trained physios right the way up to the really experienced physios, because we haven't got that background of mental health expertise, so it's really helpful bringing it back into practice. (T1)*

Many physiotherapists acknowledged the training provided from those who are formally trained in CBT-based techniques and they found that these in-service training opportunities were good enough to start applying some of elements of CBT in their practice.

*I think in terms of physiotherapy; it is a more recent idea that have come through about the importance of those sorts of things [CBT approach]. I guess they are not that recent, but they are becoming further up the list of things to do. So I think we've, the bit of training that we've had, although it has only been within our service has been very good and just opening up your eyes and your mind to those sorts of ideas of how you deal with those sorts of people. So that has been good. (T11)*

#### **5.3.8.5 Lack of CBT knowledge in the initial training**

Some physiotherapists blamed the initial education in the undergraduate level of study for the lack of knowledge of psychosocial interventions like the CBT approach.

*Part of the barrier may be lack of understanding from the university perspective. (T13)*

They believed that if they were trained in the psychosocial type of treatment during the undergraduate level, they would be able to deliver CBT-based techniques more confidently in their

practice. They discussed the importance of adding mental health and its treatment to the undergraduate curriculum as a facilitator.

*I think the big barrier is, from our training, and how we, as health care clinicians, were trained. We weren't really trained in the psychosocial aspects. We are gradually going down that line, but I think mental health is such a big thing nowadays that it's probably an important thing to put on the curriculum. So, you're not afraid of experiencing that when you come into practice and you've got some sort of understanding as to what the patient is going through. (T13)*

They believed that when they have the background skill of the CBT approach, they will be able to assess the patient and provide the effective treatment that leads to a good outcome. They emphasised the importance of having the assessment skills and being able to assess the patient in a way that allows them to deliver the treatment safely.

*The challenge is if you haven't got the background skill of the CBT approach; if you haven't got that and you recognise that the person has got a problem then you can't help, it is frustrating, so you tend to do what you do which is your physio which is your exercises and sometimes it just doesn't work. (T2)*

*What I find difficult is when they come to me as the first point of call and nobody's screened them. The GP hasn't had time to do a full assessment. They might not have had a scan for years. So, you've got to kind of do that medical screening and clear all your red flags, before you can then think, okay, we're okay here, I can move on to the next bit. So, I suppose that's one of the challenges, making sure you've done everything, and you've cleared everything, so that you feel safe to carry on. (T7)*

Some physiotherapists believed that the lack of the knowledge of CBT approach was due to the lack of formal training, which lead some of them to not apply it in their practice.

*The lack of training, most people might not know about it. And there's also, for me, a feeling of well it is really hard to get CBT anyway. (T6)*

When they were asked why they do not get this training, some of them rely on their answer on the funding and the structure of the service.

*I think there could be cost implications; I mean I suppose for me I haven't pursued it because I know we have therapists who are doing that. So, for example, if we have, if the service feels we have enough clinicians providing CBT formally then they wouldn't fund anyone else to go on that. (T3)*

Some physiotherapists believed that sometimes the barrier to get the training is the physiotherapist himself.

*I think if I was to go to my manager and asked, I think that would be something that she would consider, but like I haven't asked, so maybe the barrier is me finding time for or getting around to asking that, you know, that question. I guess I never considered that I would use it. (T3)*

Another physiotherapist felt that family commitments and her perception about the amount of study required to do CBT training prevent her from attending training.

*A mixture of things, so trying to specialise in anything from a clinical point of view I think I would find it very difficult, I have got young kids at home. I am not at a point in my life where I want to do anymore training, particularly at the moment. I do like the odd weekend course or that sort of thing, but when it comes to something like CBT training I would imagine that to do it well you would have to do a reasonable amount of home study and I do my bit to keep up my CPD, but I am not at a point where I think I can take much more on. (T5)*

#### **5.3.8.6 Lack of ongoing training, supervision and support**

This barrier was the lack of on-going training, supervision and support. Ongoing training is an essential in health care to maintain the quality of clinical skills and to improve it. Implementing a

new policy, intervention and/or an equipment requires continuous learning and practising to increase the productivity and job satisfaction. It helps expand the knowledge and increase the confidence of the healthcare providers. Many physiotherapists related the importance of ongoing training to the safety in implementing the intervention. They stated that they might lose the skills of the CBT approach, or find it difficult to apply it, if they are not able to keep practising it, and in that situation the safety of implementing it would be questionable.

*It's an intensive qualification. Number one: I don't think the NHS can afford to put everybody on it and I don't think it- I think, obviously, finance is an issue but I don't think you need everybody to go on this training. (T13)*

*My only concern is that if I wasn't having that ongoing training and I felt like my skills were drifting, I think that would be the only point where I would be thinking is it safe for me to be using CBT now? (T1)*

*I think with any skill, if you don't have on-going refresh, you don't feel refreshed with it and I think it can get more difficult to use that skill sometimes (T4)*

All participants emphasised the need for on-going training to maintain the skills and a time to practise it. This barrier is related to the first barrier which is limited source of time. Physiotherapists keep asking for the support of the managers to provide them with an adequate time to practise these skills in their daily practice.

*So, I think this is one thing that managers higher up need to think about; is that it's all very well training practitioners to do work in CBT and mental health but you've got to keep supporting them beyond once they've got those skills. Like with physio, we need ongoing training and it is just as important if you're getting skills in mental health in CBT. (T1)*

*But the more you do it [CBT approach], then the more efficient you get but if you haven't got that time to get there in the first place. It is not just being told this is what to do, it is actually going away, practising it and getting better at it. (T11)*

*“Having the training and having the time to review it, practice it, peer reviews” (T12)*

The physiotherapists who had the formal training in CBT-based techniques suffered from the fact that junior colleagues not supportive of the idea of being trained.

*So probably the area where there is less support is from junior colleagues, it is trying to encourage other people to come on board with this, so some people find it harder than others (T2)*

Some physiotherapists suffered from a lack of support from colleagues and considered this to be a barrier to using the CBT approach. The trained physiotherapists needing other physiotherapists to help them with patients, whose their psychological state was affecting the experience of pain, because there are too many (workload support). Therefore, they encouraged their colleagues to support them by practising these techniques in their own practice.

*If you're getting a lot of volume, you need support because working with mental health is really demanding and also because of the complexity of patients. (T1)*

Supportive supervision is where the supervisors and the physiotherapists work together to discuss patients' cases, solve problems, improve skills performance, increase confidence by providing reassurance that the correct practice is being followed, and providing good outcomes. This plays an important role in respect to implementing the intervention in an effective and successful way. Many physiotherapists explained the importance of the supervision in implementing CBT approach. It helped to reassure them that they were providing the intervention in the right way, or to alert them when they were not so that they can improve their skills accordingly to provide safe and effective practice.

*I think supervision is really, really important if we're going to train more physios in CBT that we need to make sure that we're working and using it safely and effectively and having*



*a more experienced supervisor in CBT or mental health is really important to make sure we're working safely. (T1)*

*I needed to get reassurance that I was taking the right sort of approach or to think why did that not work well to try and get them to where they wanted to be with it. (T11)*

Some of them indicated that this limitation in supervision might reduce their confidence in using the CBT approach.

*I suppose the on-going training and supervision. If we had any limitations, more limitations with that, I think that might make it more difficult to maintain confidence in using it [CBT approach], I suppose. (T4)*

Some physiotherapists stated that they meet monthly but found that is not enough and they suggested using a facilitator which is a one-to-one supervision.

*At the moment we meet monthly. We can bring along case studies and we discuss up-to-date things that are happening and looking at our resources and things. It would be maybe good to have maybe more, like, one-to-one, supervision. (T4)*

Another physiotherapist who was formally trained in CBT-based techniques described the difference between the amount of supervision they received in the mental health service and the amount they received in the physiotherapy service. She indicated a limitation in the supervision they got in the physiotherapy as it is restricted to discussing only a few patients' cases and occurs only monthly compared to weekly in the mental health services.

*One of the big things from my training was the importance of supervision. Really important. And in our training in the mental health service they actually have supervision once a week for an hour and they have to talk about every single patient that they see with a supervisor to check that they're working and practising safely. We do get supervision in physio, but it tends to be maybe every six weeks for about an hour. And certainly, the emphasis isn't on talking about every patient because you speak to so many. So, it's talking about just a select few and the ones that you're struggling with. (T1)*

### 5.3.8.7 Emotional resilience

One physiotherapist highlighted the importance of a physiotherapist's resilience in using CBT. Resilience is the ability to adapt well against any source of stress. In other words, it is the process of recovery from any difficult experience or stress. If physiotherapists cannot adapt well in face of the complexity of the cases in which psychological factors were impacting their conditions, they might find it difficult to use CBT approach.

*With the kind of CBT type interventions. I think the other challenge is your own resilience. Because not only do these patients have persistent pain, they quite often have long term mental health problems. I only do one clinic and I'm always exhausted by the end of it. It's very emotional and it can be very heart-breaking. So, it's protecting your own mood and being resilient in yourself and realising that actually you can just leave it here and not take it with you. That can be quite hard. (T7)*

Another physiotherapist suggested that striking a balancing between different kinds of cases (physical and psychosocial) was a way of helping them save their emotional energy while using CBT.

*I quite like the balance between having patients who I can help mechanically and patients who need more of that persistent pain advice, and I think if I, I tend to take on board people's emotions an awful lot and I overrun because I talk so much and I tend to feel a lot of what that patients feeling, if you know what I mean. I expand a lot of emotional energy on my patients and I don't know whether that's good in lots of ways because it means that hopefully my patients feel listened to and supported and all of that, but it is quite tiring, and I would be absolutely exhausted because I just put my heart and soul into everything, so it takes up a lot of my emotional energy. (T5)*

### 5.3.8.8 Lack of confidence

Some physiotherapists who are not formally trained in the CBT approach felt that they are not confident enough to apply CBT-based techniques. They had a lack of the knowledge about the content of the CBT approach.

*I suppose maybe for me personally it [barrier to use CBT] may be a bit of confidence that am I doing the right thing. I think am I missing something? So, there might be a bit of a confidence thing there. (T3)*

Some physiotherapists are anxious about using CBT because of their beliefs about their capability, since they believed that they are not confident enough to use it in their practice. They were afraid to cause harm to the patients because they did not trust their skills.

*Maybe lack of confidence, at least you know what you're talking about, worried that you might do more damage you know, careful that you don't say the wrong thing to someone, give them the wrong advice. I think some physios are a bit worried about why they don't feel confident I don't know enough about that. (T9)*

*I was at the beginning, more anxious to go in CBT approach, we don't want to talk to patients about how they're feeling and some physios prefer, like to deal with the physical and they don't like the emotional bit too much and that's maybe to do with their confidence or to do with their own personality as well. (T9)*

Physiotherapists' perceptions of the complexity of the cases treated by CBT were reported by some physiotherapists as also being a barrier that keeps them away from using it.

*Maybe a perception that CBT is for really hard cases, yes severe cases of [those], who have got a lot of mental health problems as well. You would use it for the ones who really are not getting better who just need to go for some specialist help. It makes it hard, if it is a patient who is not improving and they are anxious and they are depressed, there is no point, they need a specialist mental health worker to work with them. (T6)*

### 5.3.8.9 Scope of practice and professional role

As mentioned earlier in this chapter (see section 5.3.5) physiotherapists role is not to treat pure or severe mental problem rather than changing mental attitude toward pain. The main concern of some physiotherapists is that the use of CBT-based techniques may lead them to do things that are outside their scope of practice. So, they keep identifying whether treating someone with a specific CBT-based technique is within their scope of practice to ensure delivering good outcomes, which is challenging.

*We've just got to make sure that we work safely and effectively and recognise when we're working. (T1)*

Managers of physiotherapy services discussed that applying elements of CBT in physiotherapy practice considering their scope of practice is responsibility of all physiotherapists.

*Each clinician has the responsibility to consider the CBT within their own consultation where it is beyond their scope but within physio works' scope and when it is beyond the scope. (M2)*

There are many service resources provided to all physiotherapists and they are able to access it when they need it in order to provide a good clinical practice.

*All the clinicians are able to consider the ranges of options of service resources provided, and they all know how to access the other services to give a holistic approach to the patient. (M2)*

Managers of physiotherapy services expressed that there are two support mechanisms including the clinical advice and the operational lines, that the physiotherapists can use not only supports the physical components of a patient's complexity but the psychosocial.

*The clinical advice and the operational lines are two of the support mechanisms that the staff have that not only supports the physical components of a patient's complexity but the psychosocial. (M2)*

*The other advice line is the operational advice line. So, they could use that to speak to somebody about what do I do with regards to safeguarding? I have a patient who I think is being abused. And all of that falls within that psychosocial component of a patient's care." (M2)*

### **5.3.8.10 Language and cultural barriers**

Some physiotherapists faced a challenge with patients not understanding English because they are using a different language and sometimes they come with translator. This is particularly an issue because the CBT approach depends mainly on talking, discussing, explaining and education of patients. They believed that the accuracy of the information they provide to patients might be biased depending on the skills of the translator.

*Also, language, so via interpreters is another massive problem. Some patients turn up with interpreters or their family members, and then it gets even more difficult because you don't really know what the family member is explaining. So, then it's up to the interpreter skill to explain it. You will explain all of this dialogue and then they will turn around and say a sentence or one word and you think! and then I think a lot of it is lost in translation which I think is a real shame. (T5)*

One manager of the physiotherapy services described the cultural/family barriers that challenged the physiotherapist's ability to sustain the adherence and engagement of patients with the intervention. Patient's culture or family culture play a significant role in shaping their belief. It is therefore very challenging to change their beliefs because they trust the source of these beliefs.

*I think a lot of patients will experience difficulty in implementing, whether it's implementing the advice, the information and the CBT and the rethinking of challenging their behaviour and their thoughts. That because you are often challenging beliefs that*

*they've had for a very long time, that they trust where they've gained those beliefs from. It may be cultural; it could be culture, just family culture. It could be learned experiences from themselves: they believe that when they do this, this happens. So, they feel they have the evidence that they are right, and we are wrong. So, their belief may be very difficult to change. (M2)*

Physiotherapists may face barriers where they have engaged with the patient, but the patient then goes home, and the family continue to treat them as a sick person. So, their experience (e.g., patient with a bad back shouldn't wash the floor) may lead them to disagreeing with the advice that they've been given (e.g., washing the floor). The advice might be right, but they disagree with it because they feel they have evidence that it is wrong.

*Family culture can be that people with a bad back shouldn't work or people with a bad back shouldn't wash the floor or people with a bad back shouldn't carry the shopping bag. So, that might be a belief that that's what all people with a bad back shouldn't do. (M2)*

As a facilitator for the cultural barriers, one physiotherapy manager suggested that a patient's family member should attend the treatment session so that they can understand the intervention.

*Physiotherapists can be fighting not just the patient's belief but sometimes a cultural belief as in the wider culture, that patient's culture or a family culture. So, we often encourage patients to bring their spouse or someone from their family so that they can hear and believe that it's worth the investment of challenging that behaviour and starting to do things differently. (M2)*

### **5.3.8.11 Lack of disclosure of problem**

Lack of disclosure of the problem from the patient's perspective was reported as a barrier. Some physiotherapists found it difficult to deal with a patient who is not willing to open or disclose his problem.

*I think the difficulty sometimes comes if patients tick 'I am not depressed' in the EQ5 form and there is long history in the notes of depression and they appear depressed, and it is obvious they don't want to talk about it to us, I wouldn't challenge somebody. (T2)*

*I think another big barrier is actual getting a patient to openly admit that there's something wrong. Also, the honesty from the patient to be open about their problem. So, there's a big barrier from the patient's perspective. (T13)*

Some physiotherapists detected that the patient's gender influenced their honesty and their ability to disclose their problem.

*I think even you can get a barrier with type of gender. You know? It's difficult but sometimes you have to change the way you are when you're a male clinician and you're sitting with a female from how you are with a male. I think there is a disclosure aspect to it. (T13)*

Male patients wish to hide their mental health state and often they are not open to their physiotherapist.

*I think males as well don't want to openly admit that they've got some sort of stress or depressive state. (T13)*

### **5.3.8.11 Summary**

In this chapter, all eight various categories identified and emerged from the data were described. These categories are linked to each other and provide an explanation of the use of CBT in physiotherapy for CLBP from the perspectives of physiotherapists, patients and managers of

physiotherapy services. The next section presents a grounded theory generated from the data gathered in this study to explain the relationship between categories and thereby providing an explanation and understanding of how, when and why some physiotherapists make the decision to apply CBT for CLBP patients, whereas others do not.

#### **5.4. The Grounded Theory**

The developed theory suggests that physiotherapist's decision making to use CBT for CLBP influenced by many factors including, training in CBT, professional experience as physiotherapist and after delivering CBT, knowledge and skills, level of confidence as well as the concept of the 'idealised' patients (patients' characteristics) and treatment outcomes.

This theory grounded in the data collected in this study can be summarised with the following propositional statement.

##### ***Propositional statement***

When physiotherapists have low to moderate level of knowledge, training and experience, then they may be hesitant and lack confidence to try to apply CBT approach or may not use it in their clinical practice (Figure 13). Therefore, they need formal training in CBT, or they may need support from experienced physiotherapists to use it. Physiotherapists, who are not formally trained, reported that receiving support from their colleagues who had formal training in CBT including discussion and supervision session helps them in deciding whether use CBT or not. In



contrast, when they have a high level of knowledge, training and experience, they feel confident to try to apply elements of CBT.

Physiotherapists consider two things when deciding whether to use CBT, whether the patient is an ideal candidate and whether they are confident to provide CBT. The ideal patient is a patient who had signs that psychological factors were impacting on their condition, lacking self-management strategies and pain understanding, who had previous failed treatment and poor coping strategies. Whereas the non-ideal patient is a patient who had signs of severe mental health problems, who is not ready to make changes, who do not accept their problem, and who is not engaged in treatment.

If physiotherapists recognised that patient is *non-ideal* for initiation of CBT, because of the characteristics they noted during their assessment, then physiotherapists may decide not to use CBT regardless of their level of confidence, knowledge, and training and experience. When physiotherapists judged that the patient is *non-ideal* candidate for CBT, they would choose an alternative physiotherapeutic intervention.

In the other hand, if physiotherapists recognised that patient is *ideal* for initiation of CBT, because of the characteristics they have identified during their assessment, then physiotherapists may decide to use CBT even though they do not feel particularly confident of their knowledge, training and experience because they see that patient is *ideal* candidate for CBT.

If CBT is unsuccessful with *ideal* patients that were thought to be ideal, then physiotherapists reported that they stop using it and reflect in order to revise the concept of the ideal patient.

Alternatively, when physiotherapists observed successful treatment outcomes for *ideal* patient, they enjoyed applying it and were satisfied with level of their practice. A positive experience applying CBT meant that physiotherapists with high knowledge and those with low to moderate level of knowledge, training, and experience will be inclined to continue to use elements of CBT in their clinical practice.

Even with *ideal* patients, there are other factors in the treatment context such as time, treatment session length, follow-up availability and management support that can interfere with the success of the treatment as they act as challenges affecting the process of continuation of CBT. These factors need to be considered in order to maintain the implementation of CBT in the management of CLBP patients by physiotherapists.

Throughout the time, mediating factors such as training, experience, ongoing manager's support and colleagues' support help improve confidence to use CBT. Therefore, those who were hesitant to use CBT will become more confidence to use it as shown in Figure 13.



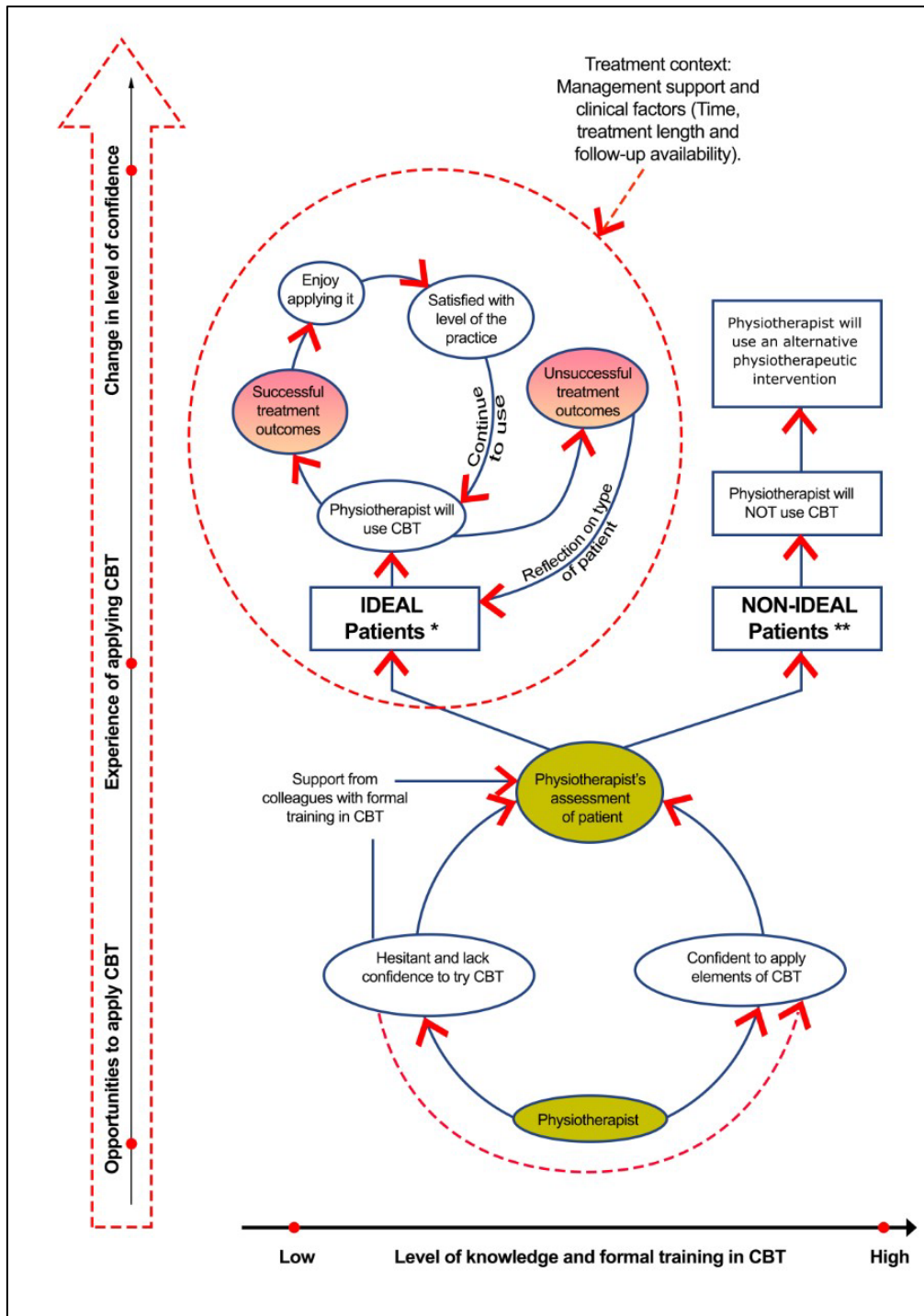


Figure 13: A grounded theory to explain the factors that influence physiotherapists' decision to use CBT in the management of the CLBP. (\* IDEAL Patient who had signs that psychological factors were impacting on their condition , lacking self-management strategies and pain understanding, who had previous failed treatment and poor coping strategies.\*\*NON-IDEAL Patient who had signs of severe mental health problems, who is not ready to make change, not accepting their problem, not engaged in treatment).

## **CHAPTER 6: DISCUSSION AND CONCLUSION**

This chapter discusses the findings of the study in relation to the existing literature. It starts with a summary of the grounded theory. Then it presents the key findings in relation to the literature review. It then evaluates the quality of this qualitative research, both critically appraising the developed grounded theory and explaining the strengths and limitations of the study. It outlines the value of this study by explaining its implications for education and practice, recommendations for further work and contribution to the knowledge. At the end, it offers a conclusion.

### **6.1. Summary of the Grounded Theory**

Physiotherapists with no formal training would assess whether patients were ideal candidates for CBT if supported by experienced colleagues. Regardless of their training or experience, physiotherapists would not apply CBT if patients were not ideal candidates. An ideal candidate is a patient who has maladaptive behaviour, lacks self-management strategies and pain understanding, has had previous failed treatment and exhibits poor coping strategies. If physiotherapists experienced successful outcomes, then they would continue to use CBT in their practice. If they experienced unsuccessful outcomes, however, then they would seek to learn more about the concept of the ideal candidate through reflection. The surrounding context such as time, follow-up availability and manager's support could also affect the success of treatment. In sum, the theory explains the importance of formal training in CBT and knowledge, experience and

ongoing support from managers and experienced colleagues, in improving physiotherapists' confidence in the use of CBT.

## **6.2. Key Findings in Relation to the Literature Review**

This section presents a discussion of the key findings in relation to the existing body of knowledge.

### **6.2.1. Recognition of Mental Health Problems or Maladaptive behaviour and/or beliefs and Setting Treatment Priorities**

This study suggests that physiotherapists tend to use CBT for patients with CLBP when they recognised related maladaptive behaviour and beliefs. Many studies have emphasised that psychosocial factors contribute to the chronicity of LBP (Ramond *et al.*, 2011; Singla *et al.*, 2015; Zangoni & Thomson, 2017). Assessing the psychosocial factors related to LBP was one of recommendations highlighted in the clinical practice guidelines for LBP (Globe *et al.*, 2016; [nice.org.uk/guidance/ng59](https://www.nice.org.uk/guidance/ng59); Van Wambeke *et al.*, 2017; Stochkendahl *et al.*, 2018; Lin *et al.*, 2019). The findings of this study suggest that physiotherapists commonly recognised symptoms of depression, stress and anxiety during their assessments of CLBP patients. This finding is in line with previous research which has shown that these conditions are common in patients with CLBP (Hill *et al.*, 2011; O'Sullivan, 2012; Synnott *et al.*, 2015; Hall *et al.*, 2018; O'Sullivan *et al.*, 2018). The evidence suggests that psychological, social and work-related problems negatively affect the prognosis of CLBP (Kendall 1999; van der Windt *et al.*, 2007; Synnott *et al.*, 2015). In order to help CLBP patients feel better and facilitate lifestyle change, physiotherapists in this present study used elements of CBT to change patients' mind-sets after they recognised indicators of

psychosocial issues. This study suggests that physiotherapists identified these issues formally using outcome measurement tools such as validated questionnaires, and indirectly through their interactions, discussions and conversations with patients, as well as from patients' medical records, appearance and body language. This finding is consistent with the findings of a recent qualitative study conducted by Zangoni & Thomson (2017), who explored the beliefs and knowledge of eight Italian physiotherapists and their experience in assessing the psychological factors in CLBP patients (Zangoni & Thomson, 2017). Zangoni & Thomson (2017) indicated that physiotherapists used a dialogue and an emphatic relationship with patients to evaluate and manage psychological factors such as depression and anxiety.

In regards to treatment priorities, physiotherapists used CBT with patients who had received previous physical treatment that had not worked; or when it was clear that their maladaptive behaviour and beliefs was the greater problem and needed to be addressed first, as mentioned above in chapter 5 (section 5.3.2). If physiotherapists determined from their assessment that this was the case, they might refer them to psychological services, but this entails a long wait, as discussed earlier in chapter 5 (section 5.3.4). In contrast, physiotherapists who were confident in using CBT could start to help patients address their maladaptive behaviour and beliefs issues. So, in their assessment, physiotherapists prioritised the patients' problems and this determined their treatment plan. Some physiotherapists were more confident to do this than others, depending on their level of training in, and experience of, CBT.

### **6.2.2. The Impact of Patients' Characteristics on the Decision of Whether to Use CBT**

This study suggests that physiotherapists' decision making was influenced by each patient's characteristics. The findings of this study suggest that physiotherapists used CBT when they assessed that CLBP patients: had maladaptive behaviour and beliefs, for example stress, anxiety and depression; their chronic pain had a significant impact on their quality of life; they had previous failed treatment; they were willing and ready to try CBT; they lacked self-management strategies; and they were struggling to cope with their pain. These findings support those from other studies which have shown that physiotherapists used cognitive behavioural interventions for patients with CLBP who suffered from stress and depression due to their pain (Nielson *et al.*, 2013; Cowell *et al* 2018; Driver, Lovell & Oprescu 2019). The findings of this study also suggest that physiotherapists did not use CBT when they assessed that patients: had severe maladaptive behaviour and beliefs problems; were not ready to make changes; were not willing to try, or had previously tried, CBT; were not engaging in treatment; were not accepting their problems; were managing well; already had a good understanding of pain; and were managing and coping with their pain themselves. Many of these characteristics are difficult to assess objectively and therefore there is limited literature about the impact that individual patient characteristics have on the effectiveness of CBT. Further studies are needed to identify and evaluate objective ways for measuring salient characteristics in patients with CLBP in order to identify patients for whom CBT is most likely to be effective.

One of the barriers reported by physiotherapists to the treatment of psychological factors such as depression and anxiety in patients with CLBP was patients' refusal to accept their problem and the impact of these factors in the maintenance of their CLBP (Zangoni & Thomson 2017). This is



consistent with the finding of this study in which physiotherapists tended not to use CBT with patients who they identified as not having accepted their problems.

### **6.2.3. Physiotherapists' Understanding of CBT**

This study suggests that training is one of the factors that influences physiotherapists' decision to use CBT in their practice (see section 5.3.3.4). The findings of this study identified that many physiotherapists used CBT techniques in their practice, but they had different levels of training and therefore different levels of knowledge and skills in how to apply these techniques.

Zangoni & Thomson (2017) proposed that Italian physiotherapists had limited awareness about the theory behind the biopsychological (BPS) model and that this lack of the required knowledge and skill reduced their confidence in using this model when treating CLBP patients. A previous qualitative study in Portuguese (Cruz, Moore & Cross, 2012) and a quantitative study in Kuwait (Alenezi & May, 2015) found that the clinical practice of musculoskeletal physiotherapists was based on the biomedical model in the Portuguese case, and on their initial education, which was biomedically oriented, in the Kuwait case. In contrast, this study suggests that physiotherapists have an overview knowledge of CBT and that their practice is oriented towards, and relies upon, a biopsychological (BPS) model. In addition, a systematic review of qualitative studies that explored physiotherapists' perceptions about assessing and treating the factors (i.e., cognitive, psychosocial) which may contribute to chronicity of LBP, advocated that BPS training is needed within postgraduate development programmes to enhance physiotherapists' confidence and skill (Synnott *et al.*, 2015).

#### **6.2.4. Experience of Delivering CBT**

The findings of this study suggest that experience is another factor that influences physiotherapists' decisions to use CBT in their practice. Experience includes experience of delivering CBT, experience in the physiotherapy profession and experience in life (see section 5.3.4). The findings also show that while the physiotherapists had a positive experience of delivering CBT overall, some physiotherapists mentioned negative points about the use of CBT, as discussed in the previous chapter (see section 5.3.8).

This study suggests that after learning and delivering CBT, physiotherapists felt that their interaction with patients in assessment and treatment improved due to CBT's ability to promote a dialogue during the treatment session. For them, it was an evolving process of sharing information between themselves and their patients. Italian physiotherapists also consistently reported using a dialogue with patients to assess the psychological factors of CLBP (Zangoni & Thomson, 2017).

The findings of this study suggest that the experience of delivering CBT encouraged to use a structured approach to exploring and managing patients' problems. This structured approach mitigated the challenges they experienced in assessing and managing CLPB. In contrast, Zangoni & Thomson (2017) indicated that physiotherapists lacked a structured approach in their assessment.

This present study suggests that physiotherapists felt that CBT helped in teaching physiotherapists to develop an empathetic therapeutic relationship with patients, which leads to positive treatment outcomes. This reflects the findings of Zangoni & Thomson (2017), who also found that

physiotherapists were empathetic with CLBP patients in the assessment and treatment of psychological factors, and that they recognised the importance of an empathetic relationship.

A recent observational study by Denny *et al.* (2019) that aimed to observe experienced physiotherapists' application of psychologically informed practice for chronic pain also found that building a therapeutic relationship/alliance is one of the techniques that physiotherapists use to assess and treat patients with chronic pain.

The findings of the current study suggest that, after delivering CBT, physiotherapists felt that their practice was improved as it became more holistic and oriented towards the biopsychosocial model. This is supported by the previous study of Jacobs *et al.* (2016), which found that physiotherapists who had received brief training in a psychologically informed physiotherapy programme also reported that they perceived that their practice had improved.

#### **6.2.5. Impact of the CBT Approach on Clinical Practice**

Talking about their training in CBT and their experience in delivering CBT, physiotherapists indicated that CBT had an effect on their clinical practice. These effects included incorporating aspects of CBT into clinical practice, knowing the scope of practice and mix of skills in the physiotherapy services, sharing knowledge of CBT, and increased confidence in using CBT skills. Managers of physiotherapy services also observed the effect of using CBT and were therefore disposed to support physiotherapists to get training and to continue to use CBT.

Physiotherapists who participated in this study felt that their confidence in assessing and managing BPS dimensions of pain increased after integrated CBT in their practice for CLBP. These findings

are consistent with those from the studies of Sanders (2013) and Synnott (2016) which explored the experience of physiotherapists after biopsychosocial training; and Cowell (2018) who explored physiotherapists' perspectives following formal training in cognitive functional therapy (CFT). CFT is one of the behavioural interventions based on the BPS model for LBP.

#### **6.2.6. Perception of Outcomes of CBT**

This study suggests that physiotherapists observed positive outcomes when they used CBT for CLBP patients. Observing positive outcomes encouraged physiotherapists to continue to use elements of CBT in their practice. Physiotherapists in this study enjoyed applying elements of CBT and felt it rewarding and satisfying as they saw the positive outcomes. Physiotherapists felt that patient engagement in the treatment, particularly in the earlier stages, contributed to the positive outcomes of CBT.

The findings of this study suggest that physiotherapists emphasised the importance of patients' engagement in the treatment by offering a relaxed atmosphere and cultivating a trusted patient-therapist relationship, feeling that this contributed to a positive outcome, in turn reflected by the positive feedback of patients. This finding is consistent with the findings of the previous study by Cowell (2018), which reported that physiotherapists acknowledged the importance of a trusting therapeutic relationship and its contribution to patient engagement and disclosure.

The current study also found that physiotherapists felt that their practice had been improved as it become more holistic and informed by the biopsychosocial dimensions related to the patient's pain. They reported that using this holistic approach allowed them to share information instead of

passive education, utilising many communication skills such as listening, interaction, discussion and agreeing goals with patients. Consistently, evidence from previous studies in CFT training suggests that physiotherapists recognise that their practice is no longer led by them, instead it is led by a conversation with their patients, considering that this communication helps in understanding patients' problems (Synnott *et al.*, 2013; Cowell *et al.*, 2018).

The findings also suggest that patients had positive perspectives on the process of treatment in terms of the outcome of treatment involving CBT. Patients in this present study felt that they learned to have a better control over their pain by understanding it and the related multidimensional factors. Also, findings of this study suggest that patients felt that they are equipped with self-management strategies, their daily activities improved, and they were able to re-establish their social life. These findings are consistent with the findings of previous qualitative data and case studies that investigate the training needed to implement BPS interventions, which is CFT (O'Sullivan *et al.*, 2018); and a qualitative study (Bunzli *et al.*, 2016) that explored patients' experience of CFT. Both these studies had similar findings to this present study in terms of patients' acquisition of control over their pain, and improved level of self-efficacy to achieve their lifestyle goals and daily function (Bunzli *et al.*, 2016; O'Sullivan *et al.*, 2018).

#### **6.2.7. Patient Satisfaction with CBT**

Patients in this study were interviewed after receiving two or more physiotherapy sessions in which physiotherapists who had formal training of CBT used an integrated CBT approach for their treatment. These patient interviews explored the key elements that patients felt enabled them to

apply what they had learned from the CBT approach. A key finding from these interviews was that patients were satisfied with the quality of their treatment. A recent qualitative study conducted by Wilson *et al.* (2017) explored the experiences of chronic pain patients who received psychologically informed physiotherapy (PIP). The treatment includes acceptance and commitment therapy (ACT), which is behavioural therapy, and psychological techniques for problem solving, which is similar to that of CBT. This treatment targeted cognitive, emotional and behavioural aspects of movement. Wilson *et al.* (2017) suggested that patients identified different personal characteristics of physiotherapists (such as being a caring person, guiding them and being a supportive therapist) that they felt contributed positively to the effect of their treatment. These findings are in a good agreement with the findings of the present study, and are also supported by Bunzli *et al.* (2016), who found that a good patient-therapist relationship facilitated the change in patients' beliefs. The present study's findings also support a study by Ferreira (2013) who concluded that a good alliance between CLBP patients and physiotherapists leads to positive outcomes.

A qualitative systematic review conducted by O'Keeffe *et al.* (2016) identified four factors that influenced patient-therapist interactions in musculoskeletal physiotherapy. The factors were the interpersonal and communication skills of the physiotherapist (listening, confidence, empathetic, friendly, encouragement), the practical skills of the physiotherapist (technical skills and training level), individualised patient-centred care (treatment customised to patients' needs) and organisational and environmental factors (time). The findings of the present study suggest that patients' satisfaction with the quality of the treatment process, which depends on many factors, as mentioned earlier, leads to good treatment outcomes. These factors were similar to those identified

by O’Keeffe *et al.* (2016) since a good patient-physiotherapist relationship/interaction is associated with a positive treatment outcome.

They also found that taking account of patients’ preferences and opinions was an important factor that influenced the therapeutic interaction and consequently improved the outcomes of treatment (O’Keeffe *et al.*, 2016). Similarly, Wilson *et al.* (2017) indicated that patients appreciated personalised treatment since they felt that it was flexible and leads to an improvement in their conditions. These are consistent with the findings of the present study, which showed that patients valued individualised treatment, and that this contributed to their satisfaction with CBT. Aguilar *et al.* (2013) conducted a qualitative study to explore Australian physiotherapists’ professional values. They identified three main values: these related to patients and the patient-therapist relationship, values related to physiotherapy knowledge, skills and practice, and values related to a human nature. This study indicated that physiotherapists professionally valued the idea of involving patients in their treatment and working with patients in a collaborative environment to improve their conditions (Aguilar *et al.*, 2013). Just as this was one of the physiotherapy profession’s values, it was also valued by patients who participated in current study since they felt this contributed to their satisfaction with CBT. Similarly, May (2007) who explored patients’ experiences after physiotherapy for LBP, indicated that patients were interested in participating in their treatment and in having a role.

For physiotherapists to sustain positive outcomes of treatment, therefore, they should keep using the key elements that patients identified in this study and that they felt contributed positively to the effect of their treatment.

A novel aspect of the present study is in identifying the barriers and challenges for CLBP patients to practise their treatment at home. This study suggests that patients faced many challenges when carrying out some aspect of self-management, including lack of self-motivation and confidence, memory issues, lack of time due to various commitments and lack of support available at home. Wilson *et al.* (2017) identified that psychologically informed physiotherapy is challenging for patients with chronic pain during treatment sessions, but she assumed also that it may be challenging for patients at home. Although the author did not explore these challenges for patients at home himself, he recommended further research in this area (Wilson *et al.*, 2017).

#### **6.2.8. Barriers to the use of CBT**

The findings of this study reveal that physiotherapists faced many obstacles to the use of CBT in their clinical practice. These barriers included time and workload, patients' expectations of the physiotherapist role, patients' preferences in respect to treatment, lack of in-depth knowledge of the CBT approach, lack of CBT knowledge in the initial training, lack of on-going training and supervision and support, lack of confidence, scope of practice and professional role, language and cultural barriers, nondisclosure of the problem, and the emotional resilience of the physiotherapist. Our findings are consistent with those of a recent survey conducted by Young *et al.* (2019), who demonstrated that lack of knowledge, skills and confidence were the obstacles reported by physiotherapists to the integration of psychological approaches. The present study indicates that time was a frequent constraint reported by all physiotherapists. This finding supports previous literature which has also found that time constraints are a barrier to the implementation of a



psychological approach (Nielsen *et al.*, 2014; Sanders *et al.*, 2013; Synnott *et al.*, 2015; Richmond *et al.*, 2018; Cowell *et al.*, 2018; Young *et al.*, 2019). Nielsen *et al.* (2013) conducted a qualitative study to explore physiotherapists' experience of a cognitive behavioural informed training and intervention process for patients with osteoarthritis of the knee. The study found that physiotherapists reported barriers including time, patients' expectations of the physiotherapists' role as 'hands on' treatment, and lack of knowledge about CBT. Each of these was also identified as a barrier in the present study.

Patients' expectations of physiotherapists' role as doing 'hands on' treatment being a barrier to the use of CBT is also supported by a qualitative study exploring the experience of Italian physiotherapists in assessing and managing psychological factors in CLBP patients (Zangoni & Thomson 2017).

The present study also suggests that some physiotherapists who had no formal training were under confident and anxious about using CBT in their practice due to lack of knowledge about the CBT approach and lack of skills. This finding is consistent with the findings of the recent qualitative study of Richmond *et al.* (2018), which identified that physiotherapists experienced negative emotions about using the cognitive behavioural approach.

Further support for the findings of the present study are found in a systematic review conducted by Driver *et al.* (2017). The review identified similar barriers to the use of psychological interventions, including a lack of knowledge and skills in respect to psychological interventions that undermined physiotherapists' ability to use them confidently in practice, time constraints, patients' expectations of the physiotherapists' role, and physiotherapists' scope of practice. Our

findings are also consistent with those identified by Foster & Delitto (2011), in terms of the challenges facing physiotherapists looking to incorporate psychosocial perspectives in their practice (Foster & Delitto, 2011). Similarly, findings from Singh *et al.* (2018) support our findings in relation to cultural barriers being challenging to physiotherapists who are trying to change their long-standing and trusted beliefs.

### **6.3. Evaluation of the Quality of this Qualitative Research and Critical Appraisal of the Developed Grounded Theory**

The rigour and trustworthiness of the study in terms of methods and findings is examined in this section in order to enable the reader to judge the quality of the study. The first part of this section examines the quality criteria of this study. The second part critiques the developed grounded theory in an effort to show its strengths and limitations, and whether it provides novel knowledge in the field of physiotherapy that could help to inform future research. This section also explains the strengths and limitations of this study.

#### **6.3.1. Evaluation of the Quality of the Research**

##### **6.3.1.1 Credibility**

I used member-checking, negative case analysis, peer debriefing and triangulation to achieve the credibility in this study (Table 27). Member checking is the first technique used in this study to increase the credibility and validity of the research data. This was used to check whether or not the conclusions drawn from the interviews are similar to what the interviewees meant to express. Member checking can also be called informant feedback or respondent validation (Harper & Cole,

2012). One of the methods of achieving member checking is by taking feedback from the study participants about the study's findings and the interpretation of the data collected during the interviews by, for example, sending a copy of the transcript and the interpretation made by the researcher from the study to the study participants. Although the researcher was not in a position to return interview transcripts to every subject separately and ask for their personal criticism on the research, member checking was undertaken with each subject, both after and during every interview, by summarising, emphasising and reflecting to subjects what they said so as to improve the accuracy of data and to ensure that it is representative of their accounts. Categories and coding were explored, compared and contrasted each time new information was found.

The second technique used in this study to ensure credibility is triangulation, which is the utilisation of a range of materials/sources to collect data, using varying techniques. Triangulation helps the researcher to explore the phenomenon from a number of viewpoints. Other methods (e.g., theoretical sampling, where subjects are chosen on the grounds of growing the final theory and categories) also serve the same purpose. Triangulation limits personal and methodological biases. For this study, data was collected from three data sources (CLBP patients, physiotherapists and managers of physiotherapy services) and using two methods of data collection (interviews and audio recording of routine physiotherapy sessions).

The third method used for enhancing credibility is *negative case analysis* (Lincoln & Guba, 1985). This identifies cases that do not back/fit the patterns found within the data collected. Such identification helps to refine the categories and codes and thus adds to the fruitfulness of the developing theory (Denzin & Lincoln, 2005; Charmaz, 2006). I attempted to identify negative

cases within the data before comparing them with other subjects in terms of the data collected and the subjects' individual characters, and this helped in explaining and comparing any deviations between the final theory, the data itself and the categories. For example, the information from participants that was grouped in category four (experience of delivering CBT) was largely positive about CBT. Nonetheless, the same physiotherapists did raise some negative points (see category six). Although I looked for people who did not like it and did not use it, I did not find any of these.

Another method used to achieve and improve credibility in this study is peer debriefing. Peer debriefing entails sharing general methodology, transcripts and final findings with supervisors, advisors and colleagues. This invites analytical questions concerning the findings and methods and provides feedback which enhances credibility and validity. In addition, I had discussion with peers (both those with little or no exposure to the topic of the research and those with prior experience of it), supervisors, and presented to colleagues at conferences. Taken together, this helps to ensure the most beneficial feedback, which helps improve the credibility of this study.

**Table27: Methods used to demonstrate the rigour and trustworthiness of the findings**

| Criteria               | Techniques used to meet the criteria   |
|------------------------|--|
| <b>Credibility</b>     | <ul style="list-style-type: none"> <li>• Member checking</li> <li>• Triangulation</li> <li>• Negative case analysis</li> <li>• Peer debriefing; presentations in conferences; discussion with colleagues</li> <li>• Discussion with supervisors, document exchange with supervisors</li> </ul> |
| <b>Transferability</b> | <ul style="list-style-type: none"> <li>• Thick description</li> </ul>  |
| <b>Dependability</b>   | <ul style="list-style-type: none"> <li>• Rich description of the study protocol</li> <li>• Establishing an audit trail</li> </ul>  |

|                       |  |
|-----------------------|--|
|                       |  |
| <b>Confirmability</b> | Maintaining field notes, memos and reflective journals<br>Audit trail<br>Reflexivity |

### **6.3.1.2 Transferability**

A substitute for external validity, as understood in quantitative research, is transferability, which is the level to which the study findings are transferable to comparable circumstances. In this study, I used a thick description technique (Table 27) in order to provide a detailed account of my experience during data collection and what participants expressed to me as a researcher within the context of the surrounding social and cultural environments in which my research is framed (see section 4.11 and section 4.13). I talked about where and when the interviews occurred (see section 4.6 and section 4.11.1), the possibility of participants conducting the interview after their physiotherapy appointments (which can be exhausting), and many aspects of data collection (see subsections of section 4.11 and section 5.2) that help provide a richer and fuller understanding of the research and the surrounding context. This allows other researchers and readers to make the transferability judgements themselves. In other words, they can use the provided evidence to establish whether my findings could be applicable to other contexts, situations, times and populations.

### **6.3.1.3 Dependability**

Dependability can be defined as whether the study can be successfully replicated and produce similar findings. Qualitative research, such as this, assumes and accepts the existence of multiple

realities that are relative to the specific situation and context in which they occur, and this makes replication of the study difficult. Nonetheless, I used two techniques to achieve dependability, namely rich description of the study protocol and establishing an audit trail (Table 27). I prepared a detailed draft of the study protocol for the purpose of obtaining the required ethical approvals. To maintain consistency, I documented all the changes and revisions to the research protocol and kept a trackable record of when and how changes were implemented.

In addition to the study protocol, I developed a detailed track record of the data collection process, and maintained sustained communication with my supervisory team through supervision meetings so as to ensure that the interview process was carried out based on the agreed protocol for the recruitment of participants. I used a secure professional transcription service recommended in the qualitative research course I attended in the University of Oxford. Then, I systematically reviewed the transcripts against the audio files for accuracy. All the steps in coding the data and identification of key categories and codes were agreed upon by me and the supervisory team. The progress of the data analysis was monitored every two weeks through supervision meetings. Any modifications of the coding system were discussed and verified by the team to ensure correct and consistent interpretation throughout the analysis.

I maintained complete records of the correspondence and minutes of supervision meetings, as well as all qualitative data files in Word, NVivo and Excel on a secure drive of the University. Back-up files were kept in a secure external storage device for future access if required. All techniques used to achieve credibility in this study serve also to achieve dependability because for research to be dependable, it must be credible, and vice versa (Lincoln & Guba, 1985).

#### **6.3.1.4 Confirmability**

Credibility refers to the level at which the research findings mirror the participants' opinions rather than the researchers' internal biases, opinions and preconceptions. It is thus advised that any measures implemented to achieve transferability, credibility and dependability also aid in achieving confirmability (Lincoln & Guba, 1985). In an effort to achieve confirmability in this study (Table 27), I explicitly described the procedures used in the research process (e.g., data collection, coding, category formation), which can enable a reader to make a judgement about the findings. I attempted to implement a range of strategies (e.g., writing memos, field notes and reflective journals) in order to maintain an audit trail; further, any decisions made over the course of the study process had already been deliberated amongst the research supervisors, and consequently the meetings were summarised and documented, serving, I believe, as an audit trail and monitoring mechanism. I used a separate reflexive journal to record the issues about sensitive topics or any potential ethical issues that might have affected my data analysis. Examples of these issues are discussed in the next section.

#### **6.3.1.5 Reflexivity**

The researcher in qualitative research is considered to be the data collection and analysis tool; therefore reflexivity, which is clarification of the researcher's personal background and characteristics should be established (Pope & Mays, 2008). The characteristics and background experience (e.g., age, gender, occupation or nationality) of the researcher may affect the data collected and its interpretation, either positively or negatively, and this needs to be acknowledged and reflected upon. To achieve this, I have provided a brief account of my experiences, values, and beliefs about the area under investigation in chapter one (see section 1.2). Such an account can

help in identifying traits of my personality and experience that may have an influence on the study's findings. Reflective journals of my feelings were maintained and analysed throughout the study.

For example, I am female physiotherapist and not from UK and that may allow the participants to share experiences they may not have shared with a male physiotherapist or UK-based physiotherapists. On the other hand, this may have an opposite effect, as participants may not tell me their experiences because of my personal characteristics. With this in mind, I sought to avoid over-interpretation of gathered data and sought to be neutral during the interviewing process, in order to ensure that my background did not influence the interviews or affect the participants' responses. This was intended to encourage the participants to talk freely about their experiences, feelings and behaviours, whether negative or positive, without any obstacles (Bowling, 2014).

I practised the interview with peers and piloted both the interview process and topic guide to improve the skills required for interviewing. As I collected the data from UK, all participants were native. Although it was a challenging experience, it was really interesting that it made me feel proud of myself that, being a non-native, international student for whom English language is my second language, I was able to interview all the participants. It was my first experience in conducting interviews and, in spite of the fact that I am good in English language skills such as listening and speaking, I was not able to understand some of the things that participants told me during interviews that were common in their usual life or culture. For instance, some of them told me common sayings or joke that were fitting to their situation; however, I did not understand the content or words since sometimes this was the first time, I had heard these words or phrases. In an



effort to enhance the accuracy of the data and the credibility of the study, after I apologised that I did not understand what they said, I gently asked more probe questions around them to understand its meaning and what participants were trying to tell me. This was done with the justification that I was not native, I could not understand the nuance of what they were saying, while being open that this was my problem, and that I was seeking to avoid introducing any personal misunderstanding.

Another challenge was that due to my culture and religion I do not shake male hands. Most of the participants understood that this was not about them, but about me and they were very kind as I was explained this with a smile on my face that showed my gratitude for their hospitable attitude so that this did not affect the discussion during the interview. One male physiotherapist misunderstood, however, as it was strange attitude to him, maybe because this was the first time he had faced this situation, in spite of the fact that I explained my situation politely and thanked him for his kind attitude of welcoming me. Although he accepted that, I saw that this affected the thread of the discussion as he was nervous and not happy during the interview and his answers were aggressive or defensive. Because I am good listener, however, and my facial expression showed him that I was interested in what he was telling me his discomfort eased and then I was able to build a good rapport with him during interview.

### **6.3.2. Critical Appraisal of the Developed Grounded Theory**

This thesis succeeds in developing a grounded theory which, to the best of my knowledge, is the first substantive theory that offers an understanding and explanation of how, when and why physiotherapists make the decision to use CBT for CLBP. No previous studies have explored the

perceptions of these three groups of stakeholders (CLBP patients, physiotherapists and physiotherapy services managers) in one study about CBT for CLBP in physiotherapy settings. Although this theory may be limited to the UK context, it can now be applied in another context or setting with attention given to the potential limitations. Such limitations include the differences in the structure and policy of the health care system and the different priorities compared to the UK. In addition, limitations may relate to the differences in the initial training provided by physiotherapy courses in different countries, and whether the biopsychosocial model and evidence-based practice is emphasised for clinical practice of physiotherapists in the education curriculum for physiotherapy, as well as whether in-depth postgraduate training courses in CBT or psychological interventions are available for physiotherapists.

The theory may also be applied to the use of CBT in the management of other chronic musculoskeletal conditions presenting to physiotherapy. Further research is required to test the extent to which the theory can be applied to different populations and conditions. The theory provides an explanation of the use of CBT for CLBP, including an overview of the challenges faced by physiotherapists and patients and how the physiotherapy services managers provided support despite resource restrictions such as finance. This could help sustain the implementation of CBT in physiotherapy or could be used as a guide to develop further implementation strategies to enhance translation of the evidence into clinical practice. In addition, further research is needed to investigate the tendency of physiotherapists to use CBT in their practice for such chronic pain patients only after being offered comprehensive training and long session times.

### **6.3.3. Strengths of the Study**

This study provides a unique contribution to the body of knowledge by providing in-depth understanding and explanation of when, why and how physiotherapists make the decision to use CBT for CLBP patients. It explored perceptions of three stakeholder groups (patients, physiotherapists and physiotherapy services managers) regarding the complex intervention of CBT in the UK, recognising that obtaining multiple perspectives increases the strength of the findings. The study was also strengthened by the use of multiple data collection methods: in addition to interviews routine physiotherapy sessions were audio recorded to ensure that the reality in the field is reflected by the collected data. Furthermore, this is the first study that makes an effort to explore the perspectives of physiotherapy service managers about the challenges and different contextual issues that influenced the use of CBT in physiotherapy for CLBP, thus providing an explanation of the contextual factors that influence the implementation of CBT. Using qualitative methods produces an explanation for the relative effect of CBT, which was a recognised gap discovered during the systematic review. The power of this study increases by using a comprehensive grounded theory approach throughout the entire study, including data collection as well as data analysis. The study also benefitted from a diverse sample, including patients with different periods of CLBP and different numbers of treatment sessions, as well as physiotherapists with different levels of CBT training and professional experience. The use of both theoretical sampling and constant comparison, which are important elements of a grounded theory approach, facilitated the process of identifying the similarities and differences in the accounts of participants. This consequently led to the generation of a theory from the grounded data.

#### **6.3.4. Limitations of the Study**

Every effort was taken to enhance the quality of this study, however there are some limitations that should be considered when interpreting the findings.

The idea of generalisability of the findings to another contexts is very difficult as the developed theory was grounded on data which was specific to those who participated in this study. I acknowledge that the relatively small sample size of this study cannot represent the whole UK physiotherapy population. It included only participants from the national health service in Yorkshire, therefore it may not be applicable for those in private sector or those in the health service in different parts of the UK. This study was also constrained by time since it was carried out for a purpose of a PhD degree; however, the useful insights provided by this study could encourage other researchers to replicate it in other contexts, and this may result in more enrichment and refinement of the developed theory. In addition, the quotes in the preceding chapter indicate that in-depth information was provided, and that data saturation was achieved.

This study used single interviews instead of the longitudinal style of interviews proposed by Charmaz (2003, 2006) as a good method to provide a researcher with a strong basis for generating a nuanced understanding of the phenomenon through checking the interpretation of data over time. As mentioned earlier, however, this study was constrained by the limited time specified for the PhD qualification. This meant that it was not possible to go back and check the new leads that developed later with earlier participants; nonetheless, I asked more probing question about these new leads in the later interviews in order to refine the analysis. Furthermore, as a limitation related to the interviewing process, member checking with participants by asking them to check their

transcripts was difficult due to time restrictions. Still, during the interviews, I kept summarising, emphasising and reflecting to participants what they said so as to ensure the accuracy of data and that it is representative of their accounts.

All interviewed physiotherapists had ten years or more professional experience, had used some elements of CBT already in their practice, and had a positive attitude towards it. Thus, new categories may have emerged if we had included participants who had a negative attitude towards CBT or who were more recently graduated with less than ten years' professional experience. Despite extensive efforts, however, I was unable to find physiotherapists and patients who have experience of CBT but were not satisfied with it; indeed, it is difficult to determine that prior to interviewing them. Although physiotherapists who had less than ten years' experience were encouraged to participate after we identified them with help of senior physiotherapists, the participation in this study was voluntary and ethically nothing could be done if they decided not to take part. I provided details about all participants and the setting of the research in an effort to ensure the transferability of the findings and to make it easy for other researchers to test the applicability of the findings and theory to different participants and contexts. Another limitation in this study is the atypical nature of the physiotherapy team from which I recruited my participants. This is because they had three physiotherapists with formal training in IAPT and that is not usual, which again increases the difficulty in transferring this research to another context.

I was able to audio-record two physiotherapy sessions in which physiotherapists incorporated CBT in the treatment of patients with CLBP. The recruitment for this recording was restricted to physiotherapists who had formal CBT training (18 months) to ensure that patients' treatment

involved some elements of CBT. The findings would be more rich and fruitful if I had recorded more sessions with physiotherapists with different levels of CBT training. The recruitment for audio recording was challenging, however, both because not all patients agreed to have their sessions recorded and because of the busy schedules of physiotherapists and limited scope of my PhD. To clarify, the aim of these recordings was to ensure that physiotherapists were actually doing what they said they were, in an effort thereby to increase the strength of the findings. In addition, I chose audio recording over video recording because I was not looking to assess the non-verbal communication. It is logical to assume that video recording may introduce bias since participants may portray their actions and responses differently and it is more intrusive than audio recording.

As I am physiotherapist and I was part of the study as a researcher, the possibility that my own perspectives may have influenced the findings cannot be excluded. Charmaz (2005) suggested that no researcher is totally neutral. Thus, in an effort to lessen this limitation, I provided a detailed personal and professional statement of myself and wrote memos, field notes and reflective journals so to be aware of the influences on the interview process and the study's findings. In addition, as mentioned earlier, the discussion with supervisors also helped.

#### **6.4. The Value of this Research**

This section discusses the implications of this research for education and for physiotherapy practice. It provides suggestions for further research of areas that warrant further exploration and presents the contribution to the knowledge.

#### **6.4.1. Implications for Education**

The findings of this research highlighted that the practice of the majority of physiotherapists is reliant on their undergraduate education and this generally lacked engagement with biopsychosocial assessment and management. Despite the huge amount of literature on the effectiveness of CBT techniques in physiotherapeutic management of CLBP, physiotherapists continue to have insufficient knowledge and skills. There is a need, therefore, to update the curriculum of undergraduate physiotherapy education with an introduction to CBT and the biopsychosocial model of physiotherapy more generally; and this should extend into postgraduate training as well. In addition, the undergraduate training needs to be better aligned with recommended guidelines. This will enhance the confidence of physiotherapists as they need in-depth knowledge and skills to incorporate CBT into their practice.

#### **6.4.2. Implications for Practice**

The findings of this study resulted in several clinical implications that should be considered by health care providers to improve the health care of future patients with CLBP. For instance, physiotherapists should continue to apply psychological interventions such as the CBT approach for CLBP patients in order to sustain the long-term positive outcomes of treatment. Understanding the multidimensional needs of CLBP patients, and the psychological issues behind their problems, will help physiotherapists to eliminate patients' internal barriers to recovery and encourage self-management strategies. For physiotherapists to be able to translate evidence-based interventions such as CBT into their clinical practice confidently, they should have access to in-depth formal

training in respect to such interventions in undergraduate or postgraduate development programmes. There is therefore a requirement for formal CBT training to overcome the insufficient knowledge and skills of CBT revealed by some physiotherapists in this study. In addition to the formal training, sufficient time should be offered to physiotherapists who treat CLBP using the CBT approach. Decision makers in physiotherapy services should therefore pay attention to the demands of using CBT and the barriers expressed by physiotherapists in an effort to facilitate and maintain the implementation of CBT in physiotherapy.

#### **6.4.3 Recommendations for Further Research**

- Further research can be conducted to test the applicability of the theory in different settings which will allow further refinement and further enhancement. Further qualitative and quantitative research could be conducted to test the developed theory.
- Researchers trying to develop an implementation strategy can use the findings from this study as a guide.
- Further research is needed to explore the importance of formal training or postgraduate training.

#### **6.4.4. Contributions to Knowledge**

The findings of this study make a unique contribution by generating an in-depth explanation and understanding of when, why and how some physiotherapists make decisions to use CBT for CLBP patients, whereas others do not.; how and for what type of CLBP patients CBT works; and for whom might CBT not work. It also provides an explanation of patients and managers. This is the



first constructivist grounded theory qualitative study exploring CLBP patients', physiotherapists' and managers' perceptions about CBT to generate a robust explanatory theory for when, why and how CBT is used in physiotherapy for CLBP. It explored the clinical decisions made by physiotherapists, with different levels of CBT training, to develop an understanding of the circumstances through which CBT is thought to be an effective and feasible treatment option. The study also looked at patients' perspectives to propose the key elements that enable patients to apply what they have learned in CBT. It also included physiotherapy service managers in an effort to provide an understanding of any wider contextual issues that impact on the use of CBT in the physiotherapeutic management of CLBP. This explanatory grounded theory will help to inform RCTs about the effectiveness of CBT for CLBP in physiotherapy. The novel aspect of this research is that the developed theory explains that physiotherapists' decision making in respect to whether or not to use CBT for CLBP is influenced by many factors, including training in CBT, professional experience as a physiotherapist and, after delivering CBT their knowledge, skills, confidence in the technique, as well as the concept of the 'idealised' patient (patients' characteristics) and treatment outcomes.

The grounded theory provides an understanding that the processes of initiation or inhibition of CBT occurs based on the concept of 'idealised' patients (ideal or non-ideal) that physiotherapists can recognise from their assessment. Ideal patients enable CBT to occur even if the physiotherapist lacks confidence or formal training in CBT. Non-ideal patients, however, inhibit the development of CBT. The treatment outcomes influence the continuation of the CBT for ideal patients. Successful treatment outcomes lead to successful continuation of the use of CBT for CLBP patients, however unsuccessful treatment outcomes lead to discontinuation of the use of CBT, in

which the physiotherapist will learn and reflect on the type of patient in order to revise the concept of the ‘idealised’ patient. The theory also explains the importance of formal training in CBT, as well as the knowledge, experience and ongoing support from managers and colleagues who have formal training in CBT, in improving the confidence of physiotherapists to use CBT. It highlights also the clinical factors (e.g., time, follow-up availability and length of treatment session) that challenge the continued use of CBT.

## **6.5. Conclusion**

CBT is an emerging area of interest in physiotherapy and there is a need to understand how best to apply it in clinical practice. This in-depth qualitative study was carried out to address the gap recognised in the literature by exploring the perceptions of CLBP patients, physiotherapists and managers of physiotherapy services about the use of CBT in the physiotherapeutic management of CLBP. An explanatory grounded theory was produced to understand and explain more fully when, why and how some physiotherapists make the decision to apply CBT for CLBP patients, whereas others do not.

The findings of this study suggest that physiotherapists’ decision making to using CBT for CLBP is influenced by many factors, including training in CBT, professional experience as a physiotherapist and, after delivering CBT, their knowledge, skills confidence with the technique, as well as the concept of the ‘idealised’ patient (patients’ characteristics) and treatment outcomes.

The theory is supported by current national and international research evidence on physiotherapist approaches to treating back pain. Since it is the first theory explaining the use of CBT for CBLP, however, further testing will enhance its applicability to other samples and contexts.



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# Appendix 1: Permission Letter for Figure 1

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## Re: Permission letter

From: **Johan Vlaeyen** (Johannes.Vlaeyen@ppw.kuleuven.be)  
Sent: Friday, October 17, 2014 10:24:09 PM  
To: LatifaAL-Enezi . (lateefa\_q8@hotmail.com)

Dear Latifa,

I hereby grant you permission to use the figure in your theses, provided that you refer to the appropriate paper.  
Success with your work!

Cheers  
Johan

Johan W.S. Vlaeyen, PhD  
University of Leuven | Research Group Health Psychology | Tiensestraat 102 – 3000 Leuven – room 02.06 | Belgium | T+32 (016) 325915  
| F +32 (016) 325923 | E [johan.vlaeyen@ppw.kuleuven.be](mailto:johan.vlaeyen@ppw.kuleuven.be) | I [www.kuleuven.be/home/english/research/ogp](http://www.kuleuven.be/home/english/research/ogp)  
Maastricht University | Department of Clinical Psychological Science | P.O. Box 616 - 6200 MD Maastricht - room 02.750 | The  
Netherlands | T +31 (043) 3881047

On 17 Oct 2014, at 17:45, LatifaAL-Enezi . <[lateefa\\_q8@hotmail.com](mailto:lateefa_q8@hotmail.com)> wrote:

Hi Johan,  
Hope you are well.

I am a PhD student in School of Health and related Research in University of Sheffield in UK. I'd like to use one of the figures in your article (Fear-avoidance and its consequences in chronic musculoskeletal pain: a state of the art) in my thesis. I wish if you can provide me with a permission letter to use the figure. The figure I am looking for is the Figure 2 that describe fear avoidance model. It will be very appreciated if you permit me to use it and I will reference it as you prefer.

Best Regards,  
Latifa Alenezi  
PhD Student  
University of Sheffield

<https://dub112.mail.live.com/ol/mail.mvc/PrintMessages?mkt=en-kw>

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## **Appendix 2: Search Strategy of Systematic review**

Initial electronic search was done using the following database: CINIHL plus full text, MEDLINE via Ovid, COCHARNE LIBRARY, SCOPUS, Pub Med, Web of science, ASSIA and Psych Info. The literature search was conducted on all full text studies published up to May 2014. Identification of eligible articles carried out using keywords, alternative keywords, and Boolean logic (OR, AND) to ensure the inclusion of all search terms in the search. The medical subject heading (MeSH) term was used in specific databases such as MEDLINE via Ovid, CINIHL plus full text, COCHARNE LIBRARY, and Pub Med. English language and human were the only limiters that used during electronic search. Hand search of the reference list of the retrieved articles be screened to obtain additional relevant articles. I exported the search results of all databases used to endnote web. I carried out the search as the following:

### **1- MEDLINE was the first database being searched using Ovid interface and it was searched multiple attempts**

**First attempt** using the following key words in which no Mesh terms used and the CLBP was not yet agreed to be the condition as it was musculoskeletal pain which was very general topic at the beginning.

#### **MEDLINE 1**

- 1- “cognitive behavioural therapy” OR CBT OR cognitive therapies
- 2- “chronic musculoskeletal pain” OR chronic pain
- 3- “effectiveness” OR efficacy\*
- 4- Variation
- 5- Reasons
- 6- Management OR treatment OR interventions
- 7- 1 AND 2 AND 6
- 8- 7 AND 3

9- 8 AND 5

10- 8 AND 4

11- “Use” OR “Implementing”

12- 8 AND 11

13- Limiters: English language, humans and Systematic review

**Second attempt** using the following key words in which no Mesh terms used and CLBP was not yet agreed to be the condition as it was musculoskeletal pain which was very general topic at the beginning. In this attempt a 3 methodological filters were used alternatively to see if it will help to pull qualitative studies. These filters are looking for best specificity (keyword no 4) or best sensitivity (keyword no 5) or best optimisation of specificity and sensitivity (keyword no 6) ([http://hiru.mcmaster.ca/hiru/HIRU\\_Hedges\\_MEDLINE\\_Strategies.aspx#Qualitative](http://hiru.mcmaster.ca/hiru/HIRU_Hedges_MEDLINE_Strategies.aspx#Qualitative)). Also physiotherapy was added to the keywords in this attempt.

## **MEDLINE 2**

1. “cognitive behavioural therapy” OR CBT OR cognitive therapies

2. “chronic musculoskeletal pain” OR chronic pain

3. “effectiveness” OR efficacy\*

4. Qualitative.tw. OR themes.tw.

5. Interview: .tw. OR px.fs. OR exp health services administration/

6. Interview: .mp. OR experience: .mp. OR qualitative.tw.

7. Management OR treatment OR interventions OR “physiotherapy” OR “physical therapy”

8. 1 AND 2 AND 7

9. 8 AND 3

10. 8 AND 4

11. 8 AND 5

12. 8 AND 6

13. Limiters: English language, humans.

**In Third attempt** the following Mesh terms was used as well as CLBP instead of chronic musculoskeletal pain was used to be more specific. Cognitive therapy (Mesh term) for cognitive behavioural therapy, low back pain (Mesh term) for low back pain and Physical therapy modalities and exercise therapy (Mesh term) for physiotherapy. The search was carried in which one time I companied cognitive therapy with low back pain in order to check if there are a qualitative studies in this area or not. Then I companied physiotherapy with them. This is because almost all physiotherapy research was mainly quantitative. Both these two searches results were exported to endnote to be included in the primary searching record.

### **MEDLINE 3**

1. Cognitive therapy (MeSH term)
2. Low back pain (MeSH term)
3. Physical therapy modalities OR Exercise therapy (MeSH term)
4. 1 AND 2
5. 4 AND 3
6. Limiter: English language and human

**CINHAL plus Full Text, Cochrane Library and PubMed** were also searched but from the first attempt the MeSH term were used which is similar to the third attempt of MEDLINE. This is because of the functionality of these databases and because these databases together with MEDLINE contain majority of all health and related literature.

1. Cognitive therapy (MeSH term)
2. Low back pain (MeSH term)
3. Physical therapy modalities OR Exercise therapy (MeSH term)
4. 1 AND 2
5. 4 AND 3
6. Limiter: English language and human

However the in the other databases (SCOPUS, Web of science, ASSIA and Psych Info) the key words and its alternatives were used because these databases lack the MeSH term. The key words and its alternatives being searched are as the following:

1. “Cognitive behavioural therap\*” OR “cognitive behavioral therap\*” OR “cognitive behaviour therap\*” OR “cognitive behavior therap\*” OR “CBT” OR “Cognitive behavioural treatment\*” OR “cognitive behavioral treatment \*” OR “cognitive behaviour treatment \*” OR “cognitive behavior treatment \*” OR “cognitive therap\*”
2. “Low back pain” OR “lower back pain” OR “Lumbago”
3. “physiotherapy\*” OR “physical therapy\*” OR “physical therapy\* modalities” OR “exercise therapy\*”
4. 1 AND 2
5. 4 AND 3
6. Limiter: English language and Humans.



### Appendix 3: Data Extraction Form of Quantitative Studies

| Study Year | Intervention (I) Comparisons (C) | n | outcome | Tools | Results Disability Mean Difference (95% CI) | Results Pain Mean Difference (95% CI) | Results Fear Avoidance beliefs Mean Difference (95% CI) | Results Anxiety and Depression Mean Difference (95% CI) | Result Others Mean Difference (95% CI) |
|------------|----------------------------------|---|---------|-------|---|---------------------------------------|---|---|--|
|            |                                  |   |         |       |   |                                       |   |   |  |
|            |                                  |   |         |       |   |                                       |   |   |  |
|            |                                  |   |         |       |   |                                       |   |   |  |
|            |                                  |   |         |       |   |                                       |   |   |  |
|            |                                  |   |         |       |   |                                       |   |   |  |
|            |                                  |   |         |       |   |                                       |   |   |  |

## Appendix 4: List of Included studies in systematic review

### Included Studies

1. Brox JI, Sørensen R, Friis A, Nygaard Ø, Indahl A, Keller A, et al. Randomized clinical trial of lumbar instrumented fusion and cognitive intervention and exercises in patients with chronic low back pain and disc degeneration. *Spine*, 2003; 28(17):1913–21.
2. Fersum KF, O’Sullivan P, Skouen J.S, Smith A, Kvale A. Efficacy of classification-based cognitive functional therapy in patients with non-specific chronic low back pain: A randomized controlled trial. *Eur J Pain* 17 (2013) 916–928
3. Froholdt A, Reikeraas O, Holm I, Keller A, and Brox JI. No difference in 9-year outcome in CLBP patients randomized to lumbar fusion versus cognitive intervention and exercises. *European Spine Journal* (2012), 10 (2382-2386)
4. Johnson RE, Jones GT, Wiles NJ, Chaddock C, Potter RG, Roberts C, et al. Active exercise, education, and cognitive behavioral therapy for persistent disabling low back pain: a randomized controlled trial. *Spine* 2007; 32(15):1578–85.
5. Lamb SE, Hansen Z, Lall R, Castelnovo E, Withers EJ, Nichols V, et al. Group cognitive behavioral treatment for low-back pain in primary care: a randomized controlled trial and cost-effectiveness analysis. *Lancet* 2010; 375:916–23.
6. Rose MJ, Reilly JP, Pennie B, Bowen-Jones K, Stanley IM, Slade PD. Chronic low back pain rehabilitation programs: a study of the optimum duration of treatment and a comparison of group and individual therapy. *Spine* 1997; 22:2246–53.

7. Smeets RJEM, Vlaeyen JWS, Hidding A, Kester ADM, van der Heijden GJMG, van Geel ACM, et al. Active rehabilitation for chronic low back pain: cognitive behavioral, physical, or both? First direct post-treatment results from a randomized controlled trial. *BMC Musculoskeletal Disorders* 2006; 7:5.
8. Spinhoven P, Kuile M, Kole-Snijders AMJ, Mansfeld MH, den Ouden D, Vlaeyen J. W.S. Catastrophizing and internal pain control as mediators of outcome in the multidisciplinary treatment of chronic low back pain. *European Journal of Pain* 8 (2004) 211–219



## **Appendix 5: Study Characteristics of Quantitative Studies**

| Study Year   | Intervention (I) Comparisons (C)                    | n   | Outcome  | Tools                                    | Results Disability<br>Mean Difference<br>(95% CI)  | Results Pain<br>Mean Difference<br>(95% CI)   | Results Fear Avoidance beliefs<br>Mean Difference<br>(95% CI)                             | Results Anxiety and Depression<br>Mean Difference<br>(95% CI)       | Result Others<br>Mean Difference<br>(95% CI)   |
|--------------|---|-----|--|--|--|---|---|---|--|
| Brox 2003    | Instrumental lumbar fusions<br><br>CBT + exercises. | 64  | Disability<br>Pain<br>Fear-avoidance beliefs<br>Anxiety and depression | ODI*<br>VAS*<br>FABQ-PA*<br><br>HSCL-25* | ODI score was significantly reduced after cognitive intervention and exercises.<br><br>2.3 (-6.8 to 11.4)<br><i>p</i> = 0.33 | VAS reduced for back and lower limb in intervention group.<br><br>8.6 (-3.0 to 20.1)<br><i>p</i> = 0.14 | Significant reduction in comparison group<br><br>-7.7 (-11.6 to -3.8)<br><i>p</i> < 0.001 | Improved in both groups<br><br>0.1 (-0.2 to 0.3)<br><i>p</i> = 0.35 | N/A  |
| Johnson 2007 | CBT + control<br><br>Educational pack               | 234 | Disability<br>Pain<br>QoL  | RMDQ*<br>VAS<br>EQ-5D*                   | Scores of RMDQ reduced in intervention group<br><br>-0.60 (-1.59 to 0.40)  | Small reductions in scores of VAS in intervention group.<br><br>-3.63 (-8.48 to 1.23)                   | N/A   | N/A   | <b>QoL:</b><br>Improvement in EQ-5D in intervention group.<br><br>0.04 (-0.01 to 0.09) |
| Fersum 2013  | CB-CFT*<br><br>MT-EX*                               | 121 | Disability<br>Pain<br>Fear-avoidance beliefs                           | ODI<br>PINRS*<br><br>FABQ-PA             | Scores of ODI were reduced significantly for intervention group<br><br>-8.2 (-12.6 to -3.8)<br><i>p</i> < 0.001              | PINRS were reduced significantly for intervention group<br><br>-1.3 (-2.1 to -0.5)                      | Reduction in FAB<br><br>-4.7 (-6.5 to -3.0)<br><i>p</i> < 0.001                           | N/A   | N/A  |

|               |  |     |   |  |  |   |   |   |  |
|---------------|--|-----|---|--|--|---|---|---|--|
|               |  |     |   |  |  | $p < 0.001$   |   |   |  |
| Froholdt 2012 | CBT + exercises<br><br>Lumbar fusion                                   | 99  | Disability Pain<br><br>Fear-avoidance beliefs<br>Anxiety and depression | ODI<br>Back and Leg Pain<br>FABQ-PA<br><br>HSCL-25 | Reduction in ODI score within both groups from 4- to 9-year follow-up<br><br>1.9 (-7.8 to 11.6)    | No significant difference<br><br>1.2 (-11.6 to 14.0)  | No significant difference<br><br>-1.3 (-4.3 to 1.6)                               | No significant difference<br><br>0.04 (-0.2 to 0.2) | N/A  |
| Lamb 2010     | CBT + control<br><br>Advice + exercises                                | 701 | Disability Pain<br>Fear-avoidance beliefs<br>QoL<br>Cost                | RMDQ<br>MVK*<br>FABQ<br>SF-12*<br>QALY*            | Sustained improvement in intervention group over one-year.<br><br>1.3 (0.56 to 2.06)<br>$P=0.0008$ | Sustained improvement in intervention group over one-year.<br><br>7.0 (3.12 to 10.81)<br>$p<0.0001$ | Reduction in scores in intervention group<br><br>2.9 (1.83 to 4.03)<br>$p<0.0001$ | N/A   | <b>QoL:</b><br>Sustained improvement over one-year in intervention group.<br><b>SP-12:</b><br>-4.1 (-5.62 to -2.63)<br>$p < 0.0001$<br><b>Cost:</b><br>QALY gained from cognitive behavioural intervention was 0.099; the incremental cost per QALY was £1786, and the probability of cost-effectiveness was >90% at a threshold of £3000 per QALY |
| Rose 1997     | CBT (individual)<br><br>CBT (Group)<br><br>Length of treatment program | 281 | Disability Pain   | RMQ<br>VAS   | No significant differences<br><br>$p > 0.05$   | No significant differences<br><br>$p > 0.05$  | N/A   | N/A   | N/A  |

|                   |                           |     |  |                              |   |   |     |     |   |
|-------------------|---------------------------|-----|--|------------------------------|---|---|-----|-----|---|
| Smeets<br>2006    | CBT + control<br><br>APT* | 223 | Disability<br>Pain<br>Depression                                   | RDQ*<br>VAS<br>BDI*          | Very little<br>difference found<br>between<br>intervention and<br>comparison in<br>RDQ scores<br><br>-0.49 (-2.17 to<br>1.19) | Intervention is<br>more<br>beneficial in<br>reduction of<br>VAS score<br>than<br>comparison<br><br>-1.71 (-5.45 to<br>2.03) | N/A | N/A | <b>Depression:</b><br>Very little<br>difference found<br>between<br>intervention and<br>comparison in<br>BDI<br>scores.<br><br><b>BDI:</b><br>-1.69 (-3.41 to 0.03)   |
| Spinhoven<br>2004 | CBT<br>WLC*               | 148 | Pain<br>Pain-<br>behaviour<br>Depression<br>Activity-<br>tolerance | PRI<br>PBS<br><br>BDI<br>BAT | N/A   | Reduction in<br>PRI<br><br>0.05 (-12 to<br>22)  | N/A | N/A | <ul style="list-style-type: none"> <li>• <b>Pain-<br/>behaviour</b></li> <li>• <b>Depression</b></li> <li>• <b>Activity-<br/>tolerance</b></li> </ul> Reduction in PBS,<br>BDI, and BAT in<br>intervention group<br>for short-term and<br>long-term follow<br>up.<br><b>PBS:</b> 0.34 (18 to 48)<br>$p < 0:001$<br><b>BDI:</b> 0.21 (04 to 37)<br>$p < 0:05$<br><b>BAT:</b> -0.50 (-62 to -<br>36)<br>$p < 0:001$ |

**Abbreviations:**

BATs- Behavioural Approach Tests

BDI -Beck Depression Inventory

EQ-5D- European Quality of Life Scale



FAB: Fear-avoidance beliefs  
FABQ-PA -Fear-avoidance beliefs for physical activity  
HSCL-25- Hopkins Symptoms Checklist for anxiety and depression  
MVK- Modified Von Korff scale  
ODI - Oswestry Disability Index  
PBS- Pain Behaviour Scale  
PINRS - Pain Intensity Numeric Rating Scale.  
PRI- Pain Rating Index of the McGill Pain Questionnaire  
QALY- Quality Adjusted Life-Year  
QoL- Quality of life  
RMDQ- Roland Morris disability questionnaire  
SF12- the 12-item short-form General Health survey  
VAS- Visual Analogue Scales

**Abbreviations:**

QoL- Quality of life  
RMDQ- Roland Morris disability questionnaire  
MVK- Modified Von Korff scale  
SF12- the 12-item short-form General Health survey  
QALY- Quality Adjusted Life-Year  
EQ-5D- European Quality of Life Scale  
ODI - Oswestry Disability Index  
FABQ-PA -Fear-avoidance beliefs for physical activity  
HSCL-25- Hopkins Symptoms Checklist for anxiety and depression  
PINRS - Pain Intensity Numeric Rating Scale.  
VAS- Visual Analogue Scales  
SF-36-Short form 36 General Health questionnaire  
DRAM - Distress and Risk Assessment Method  
PCL- Pain Cognition List

MPLC- Multidimensional pain Locus of Control questionnaire  
CSQ- Coping Strategies Questionnaire.  
CHIP- Checklist for Interpersonal Pain Behaviour  
PBS- Pain Behaviour Scale  
BATs- Behavioural Approach Tests  
BDI -Beck Depression Inventory  
STA1- Spielberger State-Trait Anxiety Inventory  
CSQ - Coping Strategies Questionnaire  
PDI - Pain Disability Index  
PBQ - Pain Beliefs Questionnaire  
GALS - General Activity Level Scale from the West Haven-Yale Multidimensional Pain Inventory  
PRC- Pain Rating Chart  
STAI - State-Trait Anxiety Inventory  
SIP-S -Sickness Impact Profile-Self  
O'SEQ -Pain Self-Efficacy Questionnaire  
HRQOL- Health-related quality of life  
RDQ- Roland Disability Questionnaire  
SIP Sickness Impact Profile for Pain-related physical and psychosocial dysfunction  
PBCH - Behaviour Checklist  
CEQ- Cognitive Errors Questionnaire  
PDI- Pain Disability Index  
IBQ- Illness Behaviour Questionnaire  
PSEQ -pain self-efficacy scale



## Appendix 6: NHS Ethical Approval

### North of Scotland Research Ethics Committee

Summerfield House  
2 Eday Road  
Aberdeen  
AB15 6RE

Telephone: 01224 558458  
Facsimile: 01224 558609  
Email: nosres@nhs.net



**Please note:** This is the favourable opinion of the REC only and does not allow you to start your study at NHS sites in England until you receive HRA Approval

15 April 2016

Miss Latifa Alenezi  
PhD student - Health Services Research  
University of Sheffield  
The Innovation Centre  
217 Portobello  
SHEFFIELD  
S1 4DP

Dear Miss Alenezi

**Study title:** Perceptions of CBT in the physiotherapy management  
for CLBP: a qualitative exploration of stakeholder views  
**REC reference:** 16/NS/0038  
**IRAS project ID:** 184908

Thank you for your letter of 14 April 2016, responding to the Proportionate Review Sub-Committee's request for changes to the documentation for the above study.

The revised documentation has been reviewed and approved by the sub-committee.

We plan to publish your research summary wording for the above study on the HRA website, together with your contact details. Publication will be no earlier than three months from the date of this favourable opinion letter. The expectation is that this information will be published for all studies that receive an ethical opinion but should you wish to provide a substitute contact point, wish to make a request to defer, or require further information, please contact the REC Manager Miss Karen Gauld, nosres@nhs.net. Under very limited circumstances (e.g. for student research which has received an unfavourable opinion), it may be possible to grant an exemption to the publication of the study.

### **Confirmation of ethical opinion**

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised.

### **Conditions of the favourable opinion**

The REC favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements. Each NHS organisation must confirm through the signing of agreements and/or other documents that it has given permission for the research to proceed (except where explicitly specified otherwise).

Guidance on applying for HRA Approval (England)/ NHS permission for research is available in the Integrated Research Application System, [www.hra.nhs.uk](http://www.hra.nhs.uk) or at <http://www.rdforum.nhs.uk>.

### Registration of Clinical Trials

All clinical trials (defined as the first four categories on the IRAS filter page) must be registered on a publically accessible database. This should be before the first participant is recruited but no later than 6 weeks after recruitment of the first participant.

There is no requirement to separately notify the REC but you should do so at the earliest opportunity e.g. when submitting an amendment. We will audit the registration details as part of the annual progress reporting process.

To ensure transparency in research, we strongly recommend that all research is registered but for non-clinical trials this is not currently mandatory.

If a sponsor wishes to request a deferral for study registration within the required timeframe, they should contact [hra.studyregistration@nhs.net](mailto:hra.studyregistration@nhs.net). The expectation is that all clinical trials will be registered, however, in exceptional circumstances non registration may be permissible with prior agreement from the HRA. Guidance on where to register is provided on the HRA website.

**It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).**

### **Ethical review of research sites**

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" above).

## Approved documents

The documents reviewed and approved by the Committee are:

| Document   | Version              | Date            |
|--|----------------------|-----------------|
| Copies of advertisement materials for research participants - Copy of the Reminder Email                           | 1.0                  | 17 March 2016   |
| Covering letter on headed paper – Response to the Provisional Opinion  | V 1.0                | 13 April 2016   |
| Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) - University of Sheffield Insurance Certificate |                      | 14 March 2016   |
| Interview schedules or topic guides for participants - Patient   | 2.0                  | 19 October 2015 |
| Interview schedules or topic guides for participants - Physiotherapist   | 2.0                  | 19 October 2015 |
| Interview schedules or topic guides for participants - Manager   | 2.0                  | 19 October 2015 |
| IRAS Application Form [IRAS Form 16032016]   | 184908/938584/37/117 | 16 March 2016   |
| IRAS Checklist XML [Checklist 13.04.2016]  |                      | 13 April 2016   |
| Letter from funder   |                      | 01 March 2016   |
| Letters of invitation to participant - Patient   | V 3.0                | 06 April 2016   |
| Letters of invitation to participant - Invitation Letter for Recording of Physiotherapy Session - Patient          | V 1.0                | 08 April 2016   |
| Letters of invitation to participant [Invitation Letter-Physiotherapist  | V 3.0                | 06 April 2016   |
| Invitation Letter for Recording of Physiotherapy Session - Physiotherapist   | V 1.0                | 08 April 2016   |
| Letters of invitation to participant [Invitation Letter-Manager  | V 3.0                | 06 April 2016   |
| Patient Participation Reply Slip   | V 1.0                | 06 April 2016   |
| PALS leaflet (Patient Advice and Liaison Service)  |                      | 13 April 2016*  |
| Participant consent form - Patient Consent Form  | V 3.0                | 06 April 2016   |
| Participant consent form - Patient Consent Form for Recording of Physiotherapy Session                             | V 1.0                | 08 April 2016   |
| Participant consent form - Consent Form for Recording of Physiotherapy Session - Physiotherapist                   | V 1.0                | 08 April 2016   |
| Participant consent form - Physiotherapist Consent Form  | V 3.0                | 06 April 2016   |
| Participant consent form - Manager Consent Form  | V 3.0                | 06 April 2016   |
| Participant information sheet - Manager Participant Information Sheet  | V 3.0                | 07 April 2016   |
| Participant Information Sheet - Patient  | V 3.0                | 07 April 2016   |
| Participant Information Sheet for Recording of Physiotherapy Session - Patient                                     | V 1.0                | 08 April 2016   |
| Participant information sheet - Physiotherapist  | V 3.0                | 07 April 2016   |

| Document   | Version | Date            |
|--|---------|-----------------|
| Participant information sheet - Physiotherapist Participant Information Sheet for Recording of Physiotherapy Session | V 1.0   | 08 April 2016   |
| Referee's report or other scientific critique report evidence of Independent Scientific Review                       |         | 16 March 2016*  |
| Research protocol or project proposal  | V 5.0   | 07 April 2016   |
| Sample diary card/patient card - Patients Sampling Frame   | 2.0     | 13 January 2016 |
| Summary CV for Chief Investigator - Latifa Alenezi   |         | 20 October 2015 |
| Summary CV for student [CV of chief Investigator]  |         | 20 October 2015 |
| Summary CV for supervisor (student research) - Liz Croot   |         | 14 March 2016   |
| Summary CV for supervisor (student research) - Janet Harris  |         | 15 March 2016   |

\*date received

### Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

### After ethical review

#### Reporting requirements

The attached document "After ethical review – guidance for researchers" gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study

The HRA website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

#### Feedback

You are invited to give your view of the service that you have received from the National Research Ethics Service and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website: <http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance>

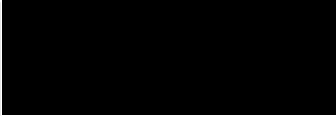
We are pleased to welcome researchers and R & D staff at our NRES committee members' training days – see details at <http://www.hra.nhs.uk/hra-training/>

**16/NS/0038**

**Please quote this number on all correspondence**

With the Committee's best wishes for the success of this project.

Yours sincerely



Pp'd on behalf of  
**Mr Gary Cooper**  
**Chair**

Enclosures: "After ethical review – guidance for researchers" [\[SL-AR2\]](#)

Copy to: Ms Aimee Card, Sheffield Teaching Hospitals NHS Foundation Trust



## **Appendix 7: The University of Sheffield Ethical Approval**



The  
University  
Of  
Sheffield.

School Of  
Health  
And  
Related  
Research.

ScHARR

Ellen Nicolson  
Clerical Officer  
Regent Court  
30 Regent Street  
Sheffield S1 4DA

20 May 2016

**Telephone:** +44 (0) 114 222 5446  
**Fax:** +44 (0) 114 222 0749 (non confidential)  
**Email:** e.l.nicolson@shef.ac.uk

**Project title:** Perceptions of cognitive behavioral therapy (CBT) in the physiotherapy management for chronic low back pain (CLBP): qualitative exploration of stakeholder views  
**6 digit URMS number:** 147790

Dear Latifa,

**LETTER TO CONFIRM THAT THE UNIVERSITY OF SHEFFIELD IS THE PROJECT'S RESEARCH GOVERNANCE SPONSOR**

The University has reviewed the following documents:

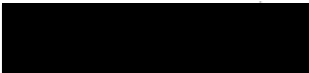
1. A University approved URMS costing record;
2. Confirmation of independent scientific approval;
3. Confirmation of independent ethics approval.

All the above documents are in place. Therefore, the University now **confirms** that it is the project's research governance sponsor and, as research governance sponsor, **authorises** the project to commence any non-NHS research activities. Please note that NHS R&D/HRA approval will be required before the commencement of any activities which do involve the NHS.

You are expected to deliver the research project in accordance with the University's policies and procedures, which includes the University's Good Research & Innovation Practices Policy: [www.shef.ac.uk/ris/other/gov-ethics/grippolicy](http://www.shef.ac.uk/ris/other/gov-ethics/grippolicy), Ethics Policy: [www.sheffield.ac.uk/ris/other/gov-ethics/ethicspolicy](http://www.sheffield.ac.uk/ris/other/gov-ethics/ethicspolicy) and Data Protection Policies: [www.shef.ac.uk/cics/records](http://www.shef.ac.uk/cics/records)

Your Supervisor, with your support and input, is responsible for providing up-to-date study documentation to all relevant sites, and for monitoring the project on an ongoing basis. Your Head of Department is responsible for independently monitoring the project as appropriate. The project may be audited during or after its lifetime by the University. The monitoring responsibilities are listed in **Annex 1**.

Yours sincerely

  
**Ellen Nicolson**  
On behalf of the ScHARR Research Ethics Committee

cc: Mari Bullock, ScHARR Research Administrator



THE QUEEN'S  
ANNIVERSARY PRIZES  
FOR HIGHER AND FURTHER EDUCATION  
1998 2000 2002

## Annex 1

To access the University's research governance website go to:  
[www.sheffield.ac.uk/ris/other/gov-ethics/governance](http://www.sheffield.ac.uk/ris/other/gov-ethics/governance)

### Monitoring responsibilities of the Supervisor:

**The primary responsibility for project monitoring lies with the Supervisor. You agree to:**

1. Establish a **site file** before the start of the project and ensure it remains up to date over the project's entire lifetime:  
[www.sheffield.ac.uk/ris/other/gov-ethics/governance/rg-forms](http://www.sheffield.ac.uk/ris/other/gov-ethics/governance/rg-forms)
2. Provide **progress reports/written updates** to the Head of Department at reasonable points over the project's lifetime, for example at:
  - a. three months after the project has started; and
  - b. on an annual basis (only if the project lasts for over 18 months); and
  - c. at the end of the project.See: [www.sheffield.ac.uk/ris/other/gov-ethics/governance/rg-forms](http://www.sheffield.ac.uk/ris/other/gov-ethics/governance/rg-forms)
3. Report **adverse events**, should they occur, to the Head of Department:  
[www.sheffield.ac.uk/ris/other/gov-ethics/governance/rg-forms](http://www.sheffield.ac.uk/ris/other/gov-ethics/governance/rg-forms)
4. Provide progress reports to the research funder (if externally-funded).
5. Establish appropriate arrangements for recording, reporting and reviewing significant developments as the research proceeds – i.e. developments that have a significant impact in relation to one or more of the following:
  - the safety or physical or mental integrity of the participants in the project;
  - the project's scientific direction;
  - the conduct or management of the project.The Head of Department should be alerted to significant developments in advance wherever possible.
6. Establish appropriate arrangements to record, handle and, as appropriate, store all information collected for or as part of the research project in such a way that it can be accurately reported, interpreted and verified without compromising the confidentiality of individual care users.

\*\*\*\*\*

### Monitoring responsibilities of the Head of Department

**You agree to:**

1. Review the **standard monitoring progress reports**, submitted by the Supervisor, and follow up any issues or concerns that the reports raise with the Supervisor.
2. Verify that **adverse events**, should they occur, have been reported properly and that actions have been taken to address the impact of the adverse event(s) and/or to limit the risk of similar adverse event(s) reoccurring.
3. Verify that a project is complying with any **ethics conditions** (e.g. that the information sheet and consent form approved by ethics reviewers is being used; e.g. that informed consent has been obtained from participants).
4. Introduce a form of **correspondence** (e.g. regular email, annual meeting) with a project's Supervisor, that is **proportionate to the project's potential level of risk**, in order to verify that a project is complying with the approved protocol and/or with any research funder conditions. Whatever correspondence is chosen the Head of Department should, as a minimum, ensure that s/he is informed sufficiently in advance about significant developments wherever possible.

## **Appendix 8: NHS Permission Letter for Research to Commence**

Ref: STH18482/AC

# Sheffield Teaching Hospitals

NHS Foundation Trust

12<sup>th</sup> May 2016

Miss Latifa Alenezi  
PhD student - Health Services Research  
University of Sheffield  
The Innovation Centre  
217 Portobello  
Sheffield  
S1 4DP

Dear Latifa

## Project Authorisation NHS Permission for Research to Commence

|                                |  |                |
|--------------------------------|--|----------------|
| <b>STH ref:</b>                | STH18482   |                |
| <b>IRAS ref:</b>               | 184908   |                |
| <b>REC ref:</b>                | 16/NS/0038   |                |
| <b>MHRA ref:</b>               | CTA No: NA   | EudraCT No: NA |
| <b>Clinical Trial reg no:</b>  | Not Applicable   |                |
| <b>Study title:</b>            | A study to explore the use of cognitive strategies to manage chronic musculoskeletal Pain. |                |
| <b>Chief Investigator:</b>     | Latifa Alenzi (University of Sheffield)  |                |
| <b>Principal Investigator:</b> | Sarah Withers (Sheffield Teaching Hospitals NHS FT)  |                |
| <b>Sponsor:</b>                | Sheffield Teaching Hospitals NHS FT  |                |
| <b>Funder:</b>                 | Unfunded   |                |

### MANDATORY REPORTING OF RECRUITMENT

The Research Department is obliged to report study set up and recruitment performance for the Trust to NIHR and to report research activity for all studies to Trust Board. In order to meet these reporting requirements please be advised that it is now a **mandatory** condition of STH project authorisation that recruitment to **all** research studies\* at STH is reported into EDGE (the Accrual Collation and Reporting Database). It is essential that recruitment is entered into EDGE **real-time** to enable directorates to accurately monitor performance. Please see item 2 of the 'Conditions of R&D Authorisation' for further details.

Please be informed that failure to report recruitment to EDGE may result in loss or delay in funding to the Trust and to the Directorate.

\*Information regarding EDGE eligibility for reporting is detailed in the 'Conditions of R&D Authorisation'



Chairman: Tony Pedder OBE Chief Executive: Sir Andrew Cash OBE



The Research Department has received the required documentation as listed below:

|  |   |
|--|---|
| 1. Sponsorship Agreement   | Not Applicable                                    |
| Clinical Trial Agreement   | Not Applicable                                    |
| Material Transfer Agreement  | Not Applicable                                    |
| Funding Award Letter   | Not Applicable                                    |
| 2. Monitoring Arrangements   | Not Applicable                                    |
| 3. STH registration document   | IRAS Form, 15 Mar 2016                            |
| 4. Evidence of favourable scientific review                                | UoS ISR, 13 Mar 2016                              |
| 5. Protocol – final version  | Version 5.0, 07 Apr 2016                          |
| 6. Participant Information Sheet – Patient                                 | Version 3.0, 07 Apr 2016                          |
| Participant Information Sheet – Manager                                    | Version 3.0, 07 Apr 2016                          |
| Participant Information Sheet – Physiotherapist                            | Version 3.0, 07 Apr 2016                          |
| 7. Consent form – Patient  | Version 3.0, 06 Apr 2016                          |
| Consent form – Manager   | Version 3.0, 06 Apr 2016                          |
| Consent form – Physiotherapist   | Version 3.0, 06 Apr 2016                          |
| 8. Letter of indemnity arrangements  | University of Sheffield<br>Insurance, 15 Mar 2016 |
| 9. ARSAC certificate / IRMER assessment                                    | Not Applicable                                    |
| 10. Ethical review- Letter of approval from NHS REC or UREC                | NHS Grampian REC,<br>16/NS/0038, 15 Apr 2016      |
| 11. Site Specific Assessment   | Not Applicable                                    |
| 12. Clinical Trial Authorisation from MHRA                                 | Not Applicable                                    |
| 13. Evidence of hosting approvals  |   |
| - STH Principal Investigator   | H Wilson (interim PI), 22<br>Apr 2016             |
| - Clinical Director  | S Buckley, 25 Apr 2016                            |
| - Research Finance   | L Fraser, 12 May 2016                             |
| - Data Protection Officer  | P Wilson, 14 Apr 2016                             |
| 14. Honorary Contract/Letter of Access                                     | Latifa Alenezi, expiry 18<br>Jun 2017             |
| 15. Associated documents   |   |
| Participant Information Sheet for Recording of<br>physio session – Patient | Version 1.0, 08 Apr 2016                          |
| Participant Information Sheet for Recording of<br>physio session – Physio  | Version 1.0, 08 Apr 2016                          |
| Advert – Reminder email  | Version 1.0, 17 Mar 2016                          |
| Interview Schedule – Patient   | Version 2.0, 19 Oct 2015                          |
| Interview Schedule – Physio's  | Version 2.0, 19 Oct 2015                          |
| Interview Schedule - Manager   | Version 2.0, 19 Oct 2015                          |
| Letter of Invitation – Patient   | Version 3.0, 06 Apr 2016                          |
| Letter of Invitation – Recording physio session,<br>patient                | Version 1.0, 08 Apr 2016                          |
| Letter of Invitation – Physio  | Version 3.0, 06 Apr 2016                          |
| Letter of Invitation – Recording physio session,<br>physio                 | Version 1.0, 08 Apr 2016                          |
| Letter of Invitation – Manager   | Version 3.0, 06 Apr 2016                          |
| Patient participation reply slip   | Version 1.0, 06 Apr 2016                          |
| Consent form for recording of physio session -                             | Version 1.0, 08 Apr 2016                          |

Ref: STH18482/AC

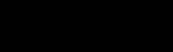
**Patient**

**Consent form for recording of physio session -  
Physio**

Version 1.0, 08 Apr 2016

**This project has been reviewed by the Research Department. NHS permission for the above research to commence has been granted on the basis described in the application form, protocol and supporting documentation on the understanding that the study is conducted in accordance with the Research Governance Framework, GCP and Sheffield Teaching Hospitals policies and procedures (see attached appendix).**

Yours sincerely

  
Professor S Heller  
Director of R&D, Sheffield Teaching Hospitals NHS Foundation Trust  
Telephone +44 (0) 114 2265934  
Fax +44 (0) 114 2265937

# Appendix 9: NHS Ethical Approval for Amendment (modified recruitment strategy)

**North of Scotland Research Ethics Service**  
Summerfield House  
2 Eday Road  
Aberdeen  
AB15 6RE

Telephone: 01224 558458  
Facsimile: 01224 558609  
Email: nosres@nhs.net



30 September 2016

Miss Latifa Alenezi  
PhD student - Health Services Research  
University of Sheffield  
The Innovation Centre  
217 Portobello  
SHEFFIELD  
S1 4DP

Dear Miss Alenezi

**Study title:** Perceptions of CBT in the physiotherapy management for CLBP: a qualitative exploration of stakeholder views  
**REC reference:** 16/NS/0038  
**Amendment number:** AM01-1 (REC Ref)  
**Amendment date:** 27 September 2016  
**Amendment summary:** Modified new recruitment strategy  
**IRAS project ID:** 184908

Thank you for submitting the above amendment, which was received on 29 September 2016. It is noted that this is a modification of an amendment previously rejected by the Committee (our letter of 16 August 2016 refers).

The modified amendment was reviewed by the Sub-Committee in correspondence. A list of the members who took part in the review is attached.

## Ethical opinion

I am pleased to confirm that the Committee has given a favourable ethical opinion of the modified amendment on the basis described in the notice of amendment form and supporting documentation.

## Approved documents

The documents reviewed and approved are:

| <i>Document</i>   | <i>Version</i>   | <i>Date</i>       |
|---|------------------|-------------------|
| Notice of Modified Amendment: No 1 (Study Ref)          | AM01-1 (REC Ref) | 27 September 2016 |
| Modification to amendment no 1                          | 1                | 27 September 2016 |
| Research protocol or project proposal - tracked changes | 7                | 27 September 2016 |



**North of Scotland Research Ethics Committee (2)**

**Attendance at Sub-Committee of the REC meeting by correspondence**

**Committee Members:**

| <i>Name</i>          | <i>Profession</i>                               | <i>Present</i> | <i>Notes</i> |
|----------------------|---|----------------|--------------|
| Dr Georgina Hold     | Vice-Chair & Senior Lecturer - Gastroenterology | Yes            |              |
| Mrs Kathryn McMullan | Retired Clinical Pharmacist                     | Yes            |              |

**Also in attendance:**

| <i>Name</i>      | <i>Position (or reason for attending)</i> |
|------------------|---|
| Mrs Carol Irvine | Senior Ethics Co-ordinator                |

# **Appendix 10: Invitation Letter for patient, physiotherapist and managers of physiotherapy services**

V 3.0 06.04.2016

## **Patient Invitation Letter**

**Title of the research:** Perception of cognitive behavioural therapy (CBT) in physiotherapy management for chronic low back pain (CLBP): a qualitative exploration of stakeholder views.

**Name of Researcher:** Latifa Alenezi (PhD student at University of Sheffield)

I am inviting you to take part in this study to discuss your experiences of physiotherapy for chronic low back pain (CLBP). Before you decide whether or not you would like to tell us your views, it is important for you to understand why this research will be conducted and what it would involve for you if you decide to participate.

This study is designed to explore the perceptions of different stakeholders of physiotherapy services (e.g., patients, physiotherapists, and manager) about CBT for CLBP in order to gain their perspectives to generate a robust explanatory theory of the clinical application of CBT for CLBP in physiotherapy settings. Therefore the purpose of the proposed study is to actively involve the three stakeholders of physiotherapy services for CLBP in improving the future services.

Please take time to read the information sheet carefully and take time to think about whether or not you would like to take part. Your participation is voluntary and you are free to withdraw at any time, without giving any reason. Please know that your contact details have not been shared with the researcher and it will not be shared unless your permission is given.

If you are interested in participating in this research, please fill in the enclosed reply slip and send it back to us in the pre-paid envelope provided and the researcher (LA) will be in touch with you.

Thank you very much for reading this letter,  
Yours sincerely,  
Latifa Alenezi

### **Physiotherapist Invitation Letter**

**Title of the research:** Perception of cognitive behavioural therapy (CBT) in physiotherapy management for chronic low back pain (CLBP): a qualitative exploration of stakeholder views.

**Name of Researcher:** Latifa Alenezi (PhD student at University of Sheffield)

I am inviting you to take part in this study to discuss your experiences of using cognitive behavioural therapy (CBT) for patients with chronic low back pain.

Before you decide whether or not you would like to tell us your views, it is important for you to understand why this research will be conducted and what it would involve for you if you decide to participate.

This study is designed to explore the perceptions of different stakeholders of physiotherapy services (e.g., patients, physiotherapists, and manager) about CBT for CLBP in order to gain their perspectives to generate a robust explanatory theory of the clinical application of CBT for CLBP in physiotherapy settings. Therefore the purpose of the proposed study is to actively involve the three stakeholders of physiotherapy services for CLBP in improving the future services.

Please take time to read the enclosed information sheet carefully and take time to think about whether or not you would like to take part. Your participation is voluntary and you are free to withdraw at any time, without giving any reason.

If you are interested in participating in this research, please do get in touch with the researcher Latifa (lkalenezi1@sheffield.ac.uk).

Thank you very much for reading this letter,

Yours sincerely,

Latifa Alenezi

V 3.0 06.04.2016

## **Invitation Letter for Managers of Physiotherapy Services**

**Title of the research:** Perception of cognitive behavioural therapy (CBT) in physiotherapy management for chronic low back pain (CLBP): a qualitative exploration of stakeholder views.

**Name of Researcher:** Latifa Alenezi (PhD student at University of Sheffield)

I am inviting you to take part in this study to discuss your views of applying cognitive behavioural therapy (CBT) in physiotherapy sessions for patients with chronic low back pain (CLBP). Before you decide whether or not you would like to tell us your views, it is important for you to understand why this research will be conducted and what it would involve for you if you decide to participate.

This study is designed to explore the perceptions of different stakeholders of physiotherapy services (e.g., patients, physiotherapists, and manager) about CBT for CLBP in order to gain their perspectives to generate a robust explanatory theory of the clinical application of CBT for CLBP in physiotherapy settings. Therefore the purpose of the proposed study is to actively involve the three stakeholders of physiotherapy services for CLBP in improving the future services.

Please take time to read the information sheet carefully and take time to think about whether or not you would like to take part. Your participation is voluntary and you are free to withdraw at any time, without giving any reason.

If you are interested in participating in this research, please do get in touch with the researcher Latifa (lkalenezi1@sheffield.ac.uk).

Thank you very much for reading this letter,

Yours sincerely,

Latifa Alenezi

# **Appendix 11: Information Letter for patient, physiotherapist and managers of physiotherapy services**

V 3.0 07.04.2016

## **Patient Participant Information Sheet**

**Title of the research:** Perception of cognitive behavioural therapy (CBT) in physiotherapy management for chronic low back pain (CLBP): a qualitative exploration of stakeholder views.

**Name of Researcher:** Latifa Alenezi

### **1. Invitation paragraph**

You are invited to take part in this research study. Please take your time to read the following information carefully to understand it. If you find anything is not clear, please feel free to contact us for further information. Take your time to decide whether or not you wish to take part. Thank you for reading this.

### **2. What is the study's purpose?**

The purpose of this research is to explore your perspectives about physiotherapy treatment you received for your chronic low back pain (CLBP).

### **3. Why have I been invited?**

You have been chosen because you received physiotherapy treatment for your chronic low back pain (CLBP), which was delivered by physiotherapist who has training in cognitive behavioural therapy (CBT).

### **4. Do I have to take part?**

It is up to you to decide to join the study. In this information sheet, the study will be described thoroughly. If you agree to take part, you have to give your written consent. You are free to withdraw at any time, without giving a reason. This would not affect the standard of care you receive.

### **5. What will happen to me if I take part?**

If you will participate in the study, you will be invited to attend an individual meeting with the researcher to discuss your experience of the treatment received. Such an interview would be quite informal and will be in a private room in the physiotherapy department. No other participation will be required from you.

In the event of disclosing poor clinical practice, the researcher will give you a leaflet of Patient Advice and Liaison Service, (PALS) and advise you to contact PALS in the contact details provided in the leaflet.

**6. Will I be recorded and how will the media be used?**

If you are invited to attend for an interview and you agree to participate then the interview will be recorded using a digital recorder. The researcher will download the audio recording into a password-protected computer. This recording will be deleted from the digital recorder immediately when it is converted into text. Some quotes from the interview might be used when we will write the study report. Any such quotations or references to the discussion will be anonymised so that no one else will know who made the comments. No other use will be made of the recordings of the interview. Data will be securely stored at School of Health and Related Research (ScHARR) for five years after the study has ended. Then it will be securely destroyed.

**7. What do I have to do?**

You will be invited to attend an interview in the physiotherapy clinic, which will be scheduled at a mutually convenient time.

**8. How long will the studies last?**

Your involvement will be for one interview of approximately 45 minutes.

**9. Expenses & payments**

Participants will not receive financial reward for taking part in this study but travel expenses can be

claimed at usual NHS rates.

**10. What are the possible disadvantages and risks of taking part?**

There are no disadvantages or risks of taking part in this study. You may be upset when reflecting on the experience of CLBP and distress may arise from recalling unpleasant memories and feelings of your condition. The possibility of getting distress is very rare. However, if distress arises the researcher will stop the interview and will ask you to consider the advice that you were given by yours physiotherapists or GP about your condition to calm down and to try to reduce your stress. If you feel able to carry on and the researcher ensures that you have regained control of the situation by talking, the interview/discussion will be resumed. However if you are unable to carry on you will be removed from discussion and accompany to quiet area or discontinue interview. You will also be encouraged to contact your GP or mental health provider.

**11. What are the possible benefits of taking part?**

There are no clinical or personal benefits to you if you decided to take part in this study. However, the information that we gain from this study will help inform future research and



might also be of direct benefit to other people with similar LBP complaints.

**12. What if there is a problem?**

If you have any queries or questions please contact:

The researcher **Latifa Alenezi** Email: [lkalenezi1@sheffield.ac.uk](mailto:lkalenezi1@sheffield.ac.uk) OR

The director of the studies: **Dr. Liz Croot**

Email: [l.croot@sheffield.ac.uk](mailto:l.croot@sheffield.ac.uk)

**13. Will my taking part in this study be kept confidential?**

All information that will be collected/ recorded about you during the course of the research will be kept strictly confidential. You will not be identifiable in any reports or publications. All documents related to the research (e.g., consent form), will be kept securely in a locked filing cabinet in the University of Sheffield. The electronic files will be stored on a password-protected computer. People in authority who want to make sure that researchers are following the correct procedures might check these documents. These people will not pass your details to anyone else. The documents will be destroyed five years after the end of the study.

**14. What will happen if I don't want to carry on with the study?**

You are free to withdraw from the study at any time.

**15. What will happen to the results of the research study?**

It is anticipated that the results of the study will be published in peer reviewed journals as well as being presented at relevant conferences. You are entitled to receive a summary of the results if you wish.

**16. Who is sponsoring the study?**

The sponsor of this study is the University of Sheffield, United Kingdom.

**17. Who has ethically reviewed this study?**

North of Scotland Research Ethics Committee have reviewed the study and granted ethical approval on 15<sup>th</sup> April 2016.

**18. Contact for further information**

Please contact

Sara withers

Email: [sarah.withers@nhs.net](mailto:sarah.withers@nhs.net)

## **Physiotherapist Participant Information Sheet**

**Title of the research:** Perception of cognitive behavioural therapy (CBT) in physiotherapy management for chronic low back pain (CLBP): a qualitative exploration of stakeholder views.

**Name of Researcher:** Latifa Alenezi

### **1. Invitation paragraph**

You are invited to take part in this research study. Please take your time to read the following information carefully to understand it. If you find anything is not clear, please feel free to contact us for further information. Take your time to decide whether or not you wish to take part. Thank you for reading this.

### **2. What is the study's purpose?**

The purpose of the study is to explore what is like to provide cognitive behavioural therapy (CBT) in physiotherapy setting.

### **3. Why have I been invited?**

You have been invited because we are recruiting physiotherapists who treating patients with chronic low back pain (CLBP) to explore their perspectives.

**4. Do I have to take part?**

Your decision to take part in this study is entirely voluntary. You are free to withdraw at any time, without giving a reason.

**5. What will happen to me if I take part?**

If you will participate in the study, you will be invited to attend an interview with the researcher regarding the research topic in a private room in the physiotherapy department. No other participation will be required from you. In the event of disclosing poor clinical practice during the interview, the researcher will advise you to discuss the issue raised by you with the service manager.

**6. Will I be recorded and how will the media be used?**

If you are invited to attend for an interview and agree to participate then the interview will be recorded using a digital recorder. The researcher will download the audio recording into a password-protected computer. This recording will be deleted from the digital recorder immediately when it is converted into text. Some quotes from the interview might be used when we will write the study report. Any such quotations or references to the discussion will be anonymised so that no one else will know who made the comments. No other use will be made of the recordings of the interview. Data will be securely

stored at School of Health and Related Research (ScHARR) for five years after the study has ended. Then it will be securely destroyed.

**7. What do I have to do?**

You will be invited to attend an interview, which will be scheduled at the mutually convenient time.

**8. How long will the studies last?**

Your involvement will be for one interview of approximately 45 minutes.

**9. Expenses & payments**

Participants will not receive financial reward for taking part in this study but travel expenses can be claimed at usual NHS rates.

**10. What are the possible disadvantages and risks of taking part?**

There are no disadvantages or risks of taking part in this study.

**11. What are the possible benefits of taking part?**

There is no intended benefit to you from taking part in this study. However, the information we get from this study may help us to implement knowledge generated from research into practice.

**12. What if there is a problem?**

If you have any queries or questions please contact:

The researcher **Latifa Alenezi** Email: [lkalenezi1@sheffield.ac.uk](mailto:lkalenezi1@sheffield.ac.uk) OR

The director of the studies: **Dr. Liz Croot**

Email: [l.croot@sheffield.ac.uk](mailto:l.croot@sheffield.ac.uk)

**13. Will my taking part in this study be kept confidential?**

All information that will be collected/ recorded about you during the course of the research will be kept strictly confidential. Direct quotations from the discussion may be used when writing up the research however these quotes will be anonymous. You will not be identifiable in any reports or publications. All documents related to the research (e.g., consent form), will be kept securely in a locked filing cabinet in the University of Sheffield. The electronic files will be stored on a password-protected computer. People in authority who want to make sure that researchers are following the correct procedures might check these documents. These people will not pass your details to anyone else. The documents will be securely destroyed five years after the end of the study.

**14. What will happen if I don't want to carry on with the study?**

You are free to withdraw from the study at any time.

**15. What will happen to the results of the research study?**

It is anticipated that the results of the study will be published in peer reviewed journals as well as being presented at relevant conferences. You are entitled to receive a summary of the results if you wish.

**16. Who is sponsoring the study?**

The sponsor of this study is the University of Sheffield, United Kingdom.

**17. Who has ethically reviewed this study?**

North of Scotland Research Ethics Committee have reviewed the study and granted ethical approval on 15<sup>th</sup> April 2016.

**18. Contact for further information**

Please contact

Sara withers

Email: [sarah.withers@nhs.net](mailto:sarah.withers@nhs.net)

V 3.0 07.04.2016

## Manager Participant Information Sheet

**Title of the research:** Perception of cognitive behavioural therapy (CBT) in physiotherapy management for chronic low back pain (CLBP): a qualitative exploration of stakeholder views.

**Name of Researcher:** Latifa Alenezi

### 1. Invitation paragraph

You are invited to take part in this research study. Please take your time to read the following information carefully to understand it. If you find anything is not clear, please feel free to contact us for further information. Take your time to decide whether or not you wish to take part. Thank you for reading this.

### 2. What is the study's purpose?

The purpose of the study is to explore the perceptions of different stakeholders of physiotherapy services (e.g., patients, physiotherapists and manager of physiotherapy services) about cognitive behavioural therapy (CBT) for chronic low back pain (CLBP) in physiotherapy setting.

### **3. Why have I been invited?**

You have been invited because we are recruiting managers of physiotherapy services to explore their perspectives about applying CBT in physiotherapy setting for patients with chronic low back pain (CLBP).

### **4. Do I have to take part?**

Your decision to take part in this study is entirely voluntary. You are free to withdraw at any time, without giving a reason.

### **5. What will happen to me if I take part?**

If you will participate in the study, you will be invited to attend an interview with the researcher regarding the research topic in a convenient place for you. No other participation will be required from you.

### **6. Will I be recorded and how will the media be used?**

If you are invited to attend for an interview and you agree to participate then the interview will be recorded using a digital recorder. The researcher will download the audio recording into a password-protected computer. This recording will be deleted from the digital recorder immediately when it is converted into text. Some quotes

from the interview might be used when we will write the study report. Any such quotations or references to the discussion will be anonymised so that no one else will know who made the comments. No other use will be made of the recordings of the interview. Data will be securely stored at School of Health and Related Research (ScHARR) for five years after the study has ended. Then it will be securely destroyed.

**7. What do I have to do?**

You will be invited to attend an interview, which will be scheduled at the mutually convenient time.

**8. How long will the studies last?**

Your involvement will be for one interview of approximately 45 minutes.

**9. Expenses & payments**

Participants will not receive financial reward for taking part in this study but travel expenses can be claimed at usual NHS rates.

**10. What are the possible disadvantages and risks of taking part?**

There are no disadvantages or risks of taking part in this study.

**11. What are the possible benefits of taking part?**

There is no intended benefit to you from taking part in this study. However, the information we get from this study may help us to implement knowledge generated from research into practice.

**12. What if there is a problem?**

If you have any queries or questions please contact:

The researcher **Latifa Alenezi** Email: [lkalenezi1@sheffield.ac.uk](mailto:lkalenezi1@sheffield.ac.uk) OR

The director of the studies: **Dr. Liz Croot**



Email: [l.croot@sheffield.ac.uk](mailto:l.croot@sheffield.ac.uk)

**13. Will my taking part in this study be kept confidential?**

All information that will be collected/ recorded about you during the course of the research will be kept strictly confidential. Direct quotations from the discussion may be used when writing up the research however these quotes will be anonymous. You will not be identifiable in any reports or publications. All documents related to the research (e.g., consent form), will be kept securely in a locked filing cabinet in the University of Sheffield. The electronic files will be stored on a password-protected computer. People in authority who want to make sure that researchers are following the correct procedures might check these documents. These people will not pass your details to anyone else. The documents will be securely destroyed five years after the end of the study.

**14. What will happen if I don't want to carry on with the study?**

You are free to withdraw from the study at any time.

**15. What will happen to the results of the research study?**

It is anticipated that the results of the study will be published in peer reviewed journals as well as being presented at relevant conferences. You are entitled to receive a summary of the results if you wish.

**16. Who is sponsoring the study?**

The sponsor of this study is the University of Sheffield, United Kingdom.

**17. Who has ethically reviewed this study?**

North of Scotland Research Ethics Committee have reviewed the study and granted ethical approval on 15<sup>th</sup> April 2016.

## **18. Contact for further information**

Please contact

Sara withers

Email: [sarah.withers@nhs.net](mailto:sarah.withers@nhs.net)



## Appendix 12: Consent Form for patient,

physiotherapist and managers of

physiotherapy services



V 3.0 06.04.16

### Patient Consent Form

**Title of the research:** Perception of cognitive behavioural therapy (CBT) in physiotherapy management for chronic low back pain (CLBP): a qualitative exploration of stakeholder views.

**Name of Researcher:** Latifa Alenezi

**Please indicate your agreement with your initials in the right hand-side boxes.**

|  |  |
|--|--|
| 1. I confirm that I have read and understood the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.                        |  |
| 2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.  |  |
| 3. I understand that the information I provide will be securely stored and that access will be restricted to the researchers working on this project. I understand I will not be identifiable in the report(s) of this research. |  |
| 4. I understand that direct quotations which are anonymous will be used in research reports. I consent for publication of direct quotes.   |  |
| 5. I understand that, as part of the study, audio recordings of the interview will be made. I consent to audio-record the interview.   |  |

|  |  |
|--|--|
| 6. I consent that my identifiable data that has already been collected with my consent would be retained and used in the study in event of loss of capacity.   |  |
| 7. I understand that data collected during the study may be looked at by individuals from the University of Sheffield, from regulatory authorities or from the NHS Trust. I give permission for these individuals to have access to this data. |  |
| 8. I agree to take part in the above research project.   |  |

**The following statements are optional. Please indicate your choice by circling it.**

|   |     |    |
|---|-----|----|
| 9. I wish to be informed about the study results. | Yes | No |
|---|-----|----|

\_\_\_\_\_  
Name of participant

\_\_\_\_\_  
Name of person taking consent

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Signature

When completed, 1 for participant; 1 (original) for researcher site file; 1 to be kept in notes.

**Physiotherapist Consent Form**

**Title of the research:** Perception of cognitive behavioural therapy (CBT) in physiotherapy management for chronic low back pain (CLBP): a qualitative exploration of stakeholder views.



**Name of Researcher:** Latifa Alenezi

**Please indicate your agreement with your initials in the right hand-side boxes.**

|   |  |
|---|--|
| <p>1. I confirm that I have read and understood the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.</p>                                      |  |
| <p>2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.</p>  |  |
| <p>3. I understand that the information I provide will be securely stored and that access will be restricted to the researchers working on this project. I understand I will not be identifiable in the report(s) that result from this research.</p> |  |
| <p>4. I understand that direct quotations which are anonymous will be used in research reports. I consent for publication of direct quotes.</p>   |  |
| <p>5. I understand that, as part of the study, audio recordings of the interview will be made. I consent to audio-record of the interview.</p>  |  |
| <p>6. I consent that my identifiable data that has already been collected with my consent would be retained and used in the study in event of loss of capacity.</p>   |  |

|  |  |
|--|--|
| 7. I understand that data collected during the study may be looked at by individuals from the University of Sheffield, from regulatory authorities or from the NHS Trust. I give permission for these individuals to have access to this data. |  |
| 8. I agree to take part in the above research project.   |  |

**The following statements are optional. Please indicate your choice by circling it.**

|   |     |    |
|---|-----|----|
| 6. I wish to be informed about the study results. | Yes | No |
|---|-----|----|

\_\_\_\_\_

Name of participant

\_\_\_\_\_

Name of person taking consent

\_\_\_\_\_

Date

\_\_\_\_\_

Date

\_\_\_\_\_

Signature

\_\_\_\_\_

Signature

When completed, 1 for participant; 1 (original) for researcher site file; 1 to be kept in notes.

V 3.0 06.04.16

**Consent Form of Manager of physiotherapy services**

**Title of the research:** Perception of cognitive behavioural therapy (CBT) in physiotherapy management for chronic low back pain (CLBP): a qualitative exploration of stakeholder views.

**Name of Researcher:** Latifa Alenezi

**Please indicate your agreement with your initials in the right hand-side boxes.**

|   |  |
|---|--|
| 1. I confirm that I have read and understood the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.                             |  |
| 2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.   |  |
| 3. I understand that the information I provide will be securely stored and that access will be restricted to the researchers working on this project. I understand that I will not be identifiable in the report(s) of this research. |  |
| 4. I understand that direct quotations which are anonymous will be used in research reports. I consent for publication of direct quotes.  |  |
| 5. I understand that, as part of the study, audio recordings of the interview will be made. I consent to audio-record the interview.  |  |
| 6. I consent that my identifiable data that has already been collected with my consent would be retained and used in the study in event of loss of capacity.  |  |



|  |  |
|--|--|
| 7. I understand that data collected during the study may be looked at by individuals from the University of Sheffield, from regulatory authorities or from the NHS Trust. I give permission for these individuals to have access to this data. |  |
| 8. I agree to take part in the above research project.   |  |

**The following statements are optional. Please indicate your choice by circling it.**

|   |     |    |
|---|-----|----|
| 6. I wish to be informed about the study results. | Yes | No |
|---|-----|----|

\_\_\_\_\_  
Name of participant

\_\_\_\_\_  
Name of person taking consent

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Signature

When completed, 1 for participant; 1 (original) for researcher site file; 1 to be kept in notes.

# Appendix 13: Topic Guide for patient, physiotherapist and managers of physiotherapy services Interviews

V 2.0 19.10.2015

## Interview Topic Guide – Patients

**NOTE:** The researcher will use this flexible topic guide of interest that developed based on relevant literature to guide the discussion during the interview. The questions in this topic guide might be developed also over time and won't be the same with all participants depending in what interviewee will tell. It also will be flexible which

Thank you for agreeing to take part in this study and thank you for agreeing discuss your experiences.

- Will you begin briefly describing your low back pain, how it affected you?
- Does it stop you from doing the things you need to psychologically and socially?
- Can you tell me about the physiotherapy treatment you received?
  - How long did each session last?
  - How long did you have physiotherapy treatment for?
  - What was the outcome of the treatment?
  
- Is your treatment required you to anything differently?
  - How did you feel about this?

- Did you encounter any problems or difficulty completing the exercise or what you have learned from physiotherapist to do at home? Explain
- How do you feel you responded to the treatment?
- Is this what you expected from physiotherapy treatment? Explain
- Is there anything further you would like to mention or discuss?

Thank you for taking the time to discuss your experience.



## Interview Topic Guide - Physiotherapists

**NOTE:** The researcher will use this flexible topic guide of interest that developed based on relevant literature to guide the discussion during the interview. The questions in this topic guide might be developed also over time and won't be the same with all participants depending in what interviewee will tell. It also will be flexible which

Thank you for agreeing to take part in this study and thank you for agreeing to discuss your experiences.

- Will you begin by briefly describing your background and experience in relation to chronic low back pain disorders?
- What experiences do you have about cognitive behavioural therapy (CBT)?
- Do you use CBT in your practice?
- Tell me a bit about how/when you use CBT?
  - Type of patients?
  - Clinical indications for CBT?
  - Precautions/contraindications?
- Where/how did you learn how to use CBT in this way?
  - Initial training?
  - CPD?
- How often do you use these approaches?
- When/in which patients do you find CBT particularly effective?

- How is it effective?
- When/in which patients do you find CBT is not effective?
- Are there any problems/challenges you need to be aware of when using CBT?
  - What are they?
- Is there anything that stops you using CBT when you would like to use it?
  - What is it?
- Any recommendation?
- Is there anything further you would like to mention or discuss?

Thank you.

## Interview Topic Guide - Managers of Physiotherapy services.

**NOTE:** The researcher will use this flexible topic guide of interest that developed based on relevant literature to guide the discussion during the interview. The questions in this topic guide might be developed also over time and won't be the same with all participants depending in what interviewee will tell. It also will be flexible which

Thank you for agreeing to take part in this study and thank you for agreeing to discuss your experiences.

- Will you begin by briefly describing your experience of cognitive behavioural therapy (CBT)?
- What is your opinion about physiotherapists who apply cognitive behavioural therapy (CBT) to patients with chronic low back pain (CLBP)?
  - Do you encourage them to offer CBT?
- From your perspective, what values do you think CBT has for patients with CLBP?
- Do you offer any opportunities for physiotherapists to access training in CBT?
  - What are these opportunities?
  - Why not?
- In your opinion, what do you see as the challenges in providing CBT for CLBP patients in physiotherapy?
- Is there anything further you would like to mention or discuss?

Thank you

# **Appendix 14: Invitation letter of Recording Session for patient and physiotherapist**

V 1.0 08.04.2016

## **Invitation Letter (Patient)**

### **Recording of Physiotherapy Session**

**Title of the research:** Perception of cognitive behavioural therapy (CBT) in physiotherapy management for chronic low back pain (CLBP): a qualitative exploration of stakeholder views.

**Name of Researcher:** Latifa Alenezi (PhD student at University of Sheffield)

I am inviting you to take part in this study to discuss your experiences of physiotherapy for chronic low back pain (CLBP). This study is designed to explore the perceptions of different stakeholders of physiotherapy services (e.g., patients, physiotherapists, and manager) about CBT for CLBP in order to gain their perspectives to generate a robust explanatory theory of the clinical application of CBT for CLBP in physiotherapy settings. Therefore the purpose of the proposed study is to actively involve the three stakeholders of physiotherapy services for CLBP in improving the future services.

If you will participate in the study, your routine physiotherapy session will be recorded by a digital recorder after written permissions of you and your physiotherapist are given. Then you will be invited to attend an individual meeting with the researcher to discuss your experience of the treatment that you received. Such an interview would be quite informal and will be arranged to take place a day after your treatment session been recorded or at time convenient to you.



Please take time to read the information sheet carefully and take time to think about whether or not you would like to take part. Your participation is voluntary and you are free to withdraw at any time, without giving any reason. Please know that your contact details have not been shared with the researcher and it will not be shared unless your permission is given.

If you are interested in participating in this research, please fill in the enclosed reply slip and send it back to us in the pre-paid envelope provided and the researcher (LA) will be in touch with you.

Thank you very much for reading this letter,

Yours sincerely,

Latifa Alenezi

## **Invitation Letter (Physiotherapist)**

### **Recording of Physiotherapy Session**

**Title of the research:** Perception of cognitive behavioural therapy (CBT) in physiotherapy management for chronic low back pain (CLBP): a qualitative exploration of stakeholder views.

**Name of Researcher:** Latifa Alenezi (PhD student at University of Sheffield)

I am inviting you to take part in this study to discuss your experiences of using cognitive behavioural therapy (CBT) for patients with chronic low back pain. This study is designed to explore the perceptions of different stakeholders of physiotherapy services (e.g., patients, physiotherapists, and manager) about CBT for CLBP in order to gain their perspectives to generate a robust explanatory theory of the clinical application of CBT for CLBP in physiotherapy settings. Therefore the purpose of the proposed study is to actively involve the three stakeholders of physiotherapy services for CLBP in improving the future services.

If you will participate in the study, one of your routine physiotherapy sessions for patient with CLBP will be recorded by a digital recorder after written permissions of you and your patient are given. Then you will be invited to attend an individual meeting with the researcher to discuss your experience of the treatment that you delivered. Such an interview would be quite informal and will be arranged to take place a day after your treatment session been recorded or at time convenient to you.

Please take time to read the enclosed information sheet carefully and take time to think about whether or not you would like to take part. Your participation is voluntary and you are free to withdraw at any time, without giving any reason.

If you are interested in participating in this research, please do get in touch with the researcher Latifa (lkalenezi1@sheffield.ac.uk).

Thank you very much for reading this letter,

Yours sincerely,

Latifa Alenezi

# Appendix 15: Information sheet of Recording

## Session for patient and physiotherapist

V 1.0 08.04.2016

### Participant Information Sheet (Patients) (Recording of Physiotherapy session)

**Title of the research:** Perception of cognitive behavioural therapy (CBT) in physiotherapy management for chronic low back pain (CLBP): a qualitative exploration of stakeholder views.

**Name of Researcher:** Latifa Alenezi

#### 1. Invitation paragraph

You are invited to take part in this research study. Please take your time to read the following information carefully to understand it. If you find anything is not clear, please feel free to contact us for further information. Take your time to decide whether or not you wish to take part. Thank you for reading this.

#### 2. What is the study's purpose?

The purpose of this research is to explore your perspectives about physiotherapy treatment you received for your chronic low back pain (CLBP).

#### 3. Why have I been invited?

You have been chosen because you will receive a physiotherapy treatment for your chronic low back pain (CLBP), which will be delivered by physiotherapist who has training in cognitive behavioural therapy (CBT).

#### 4. Do I have to take part?

It is up to you to decide to join the study. In this information sheet, the study will be described thoroughly. If you agree to take part, you have to give your written consent. You are free to withdraw at any time, without giving a reason. This would not affect the standard of care you receive.

#### 5. What will happen to me if I take part?

If you will participate in this study, your physiotherapy session will be recorded by a digital recorder after written permissions of you and your physiotherapist are given. The researcher will not be available during the session. Then you will be invited to attend an individual meeting with the researcher to discuss your experience of the treatment that you received. Such an interview would be quite informal and will be arranged to take place a day after your treatment session been recorded or at time convenient to you. This interview will be in a private room in the physiotherapy department. No other participation will be required from you. In

event of disclosing poor clinical practice, the researcher will give you a leaflet of Patient Advice and Liaison Service, (PALS) and advise you to contact PALS in the contact details provided in the leaflet.

#### **6. Will I be recorded and how will the media be used?**

If you agree to take part and participate in this study then your physiotherapy session and the interview

following this session will be recorded using a digital recorder. The researcher will download the audio recording into a password-protected computer. This recording will be deleted from the digital recorder immediately when it is converted into text. Some quotes from the interview might be used when we write the study report. Any such quotations or references to the discussion will be anonymised so that no one else will know who made the comments. No other use will be made of the recordings of the physiotherapy session and the interview. Data will be securely stored at School of Health and Related Research (ScHARR) for five years after the study has ended. Then it will be securely destroyed.

#### **7. What do I have to do?**

You will be invited to attend an interview in the physiotherapy clinic, which will be scheduled at a mutually convenient time after your physiotherapy session been recorded with permissions of you and your physiotherapist.

#### **8. How long will the studies last?**

Your involvement will be attending your routine physiotherapy session so that the researcher can record it and then you are involved in one interview of approximately 45 minutes. This interview will be arranged to take place a day after your physiotherapy session been recorded or at time convenient to you.

#### **9. Expenses & payments**

Participants will not receive financial reward for taking part in this study but travel expenses can be claimed at usual NHS rates.

#### **10. What are the possible disadvantages and risks of taking part?**

There are no disadvantages or risks of taking part in this study. You may be upset when reflecting on the experience of CLBP and distress may arise from recalling unpleasant memories and feelings of your condition. The possibility of getting distress is very rare. However, if distress arises the researcher will stop the interview and will ask you to consider the advice that you were given by yours physiotherapists or GP about your condition to calm down and to try to reduce your stress. If you feel able to carry on and the researcher ensures that you have regained control of the situation by talking, the interview/discussion will be resumed. However if you are unable to carry on you will be removed from discussion and accompany to quiet area or discontinue interview. You will also be encouraged to contact your GP or mental health provider.

#### **11. What are the possible benefits of taking part?**

There are no clinical or personal benefits to you if you decided to take part in this study. However, the information that we gain from this study will help inform future research and might also be of direct benefit to other people with similar LBP complaints.

**12. What if there is a problem?**

If you have any queries or questions please contact:

The researcher **Latifa Alenezi** Email: [lkalenezi1@sheffield.ac.uk](mailto:lkalenezi1@sheffield.ac.uk) OR

The director of the studies: **Dr. Liz Croot**

Email: [l.croot@sheffield.ac.uk](mailto:l.croot@sheffield.ac.uk)

**13. Will my taking part in this study be kept confidential?**

All information that will be collected/ recorded about you during the period of the research will be kept strictly confidential. You will not be identifiable in any reports or publications. All documents related to the research (e.g., consent form), will be kept securely in a locked filing cabinet in the University of Sheffield. The electronic files will be stored on a password-protected computer. People in authority who want to make sure that researchers are following the correct procedures might check these documents. These people will not pass your details to anyone else. The documents will be destroyed five years after the end of the study.

**14. What will happen if I don't want to carry on with the study?**

You are free to withdraw from the study at any time.

**15. What will happen to the results of the research study?**

It is anticipated that the results of the study will be published in peer reviewed journals as well as being presented at relevant conferences. You are entitled to receive a summary of the results if you wish.

**16. Who is sponsoring the study?**

The sponsor of this study is the University of Sheffield, United Kingdom.

**17. Who has ethically reviewed this study?**

North of Scotland Research Ethics Committee have reviewed the study and granted ethical approval on 15<sup>th</sup> April 2016.

**18. Contact for further information**

Please contact

Sara withers

Email: [sarah.withers@nhs.net](mailto:sarah.withers@nhs.net)

**Participant Information Sheet (Physiotherapist)  
(Recording of Physiotherapy session)**

**Title of the research:** Perception of cognitive behavioural therapy (CBT) in physiotherapy management for chronic low back pain (CLBP): a qualitative exploration of stakeholder views.

**Name of Researcher:** Latifa Alenezi

**1. Invitation paragraph**

You are invited to take part in this research study. Please take your time to read the following information carefully to understand it. If you find anything is not clear, please feel free to contact us for further information. Take your time to decide whether or not you wish to take part. Thank you for reading this.

**2. What is the study's purpose?**

The purpose of the study is to explore what is like to provide cognitive behavioural therapy (CBT) in physiotherapy setting.

**3. Why have I been invited?**

You have been invited because we are recruiting physiotherapists who treating patients with chronic low back pain (CLBP) to explore their perspectives.

**4. Do I have to take part?**

Your decision to take part in this study is entirely voluntary. You are free to withdraw at any time, without giving a reason.

**5. What will happen to me if I take part?**

If you will participate in the study, one of your physiotherapy sessions for patient with CLBP will be recorded by a digital recorder after written permissions of you and your patient are given. The researcher will not be available during the session. Then you will be invited to attend an individual meeting with the researcher to discuss your experience of the treatment that you delivered. Such an interview would be quite informal and will be arranged to take place a day after your treatment session been recorded or at time convenient to you. This interview will be in a private room in the physiotherapy department. No other participation will be required from you. In event of disclosing poor clinical practice during the interview, the researcher will advise you to discuss the issue raised by you with the service manager.

**6. Will I be recorded and how will the media be used?**

If you agree to take part and participate in this study then one of your physiotherapy session for patient with CLBP and the interview

following this session will be recorded using a digital recorder. The researcher will download the audio recording into a password-protected computer. This recording will be deleted from the digital recorder immediately when it is converted into text. Some quotes from the interview might be used when we write the study report. Any such quotations or references to the discussion will be anonymised so that no one else will know who made the comments. No other use will be made of the recordings of the physiotherapy session and the interview. Data will be securely stored at School of Health and Related Research (ScHARR) for five years after the study has ended. Then it will be securely destroyed.

#### **7. What do I have to do?**

You will be invited to attend an interview with the researcher, which will be scheduled at a mutually convenient time after the physiotherapy session of patient with CLBP been recorded with permissions of you and your patient.

#### **8. How long will the studies last?**

Your involvement will be attending your routine physiotherapy session for CLBP patient so that the researcher can record it and then you are involved in one interview of approximately 45 minutes. This interview will be arranged to take place a day after the physiotherapy session been recorded or at time convenient to you.

#### **9. Expenses & payments**

Participants will not receive financial reward for taking part in this study but travel expenses can be claimed at usual NHS rates.

#### **10. What are the possible disadvantages and risks of taking part?**

There are no disadvantages or risks of taking part in this study.

#### **11. What are the possible benefits of taking part?**

There is no intended benefit to you from taking part in this study. However, the information we get from this study may help us to implement knowledge generated from research into practice.

#### **12. What if there is a problem?**

If you have any queries or questions please contact:

The researcher **Latifa Alenezi** Email: [lkalenezi1@sheffield.ac.uk](mailto:lkalenezi1@sheffield.ac.uk) OR

The director of the studies: **Dr. Liz Croot**

Email: [l.croot@sheffield.ac.uk](mailto:l.croot@sheffield.ac.uk)

#### **13. Will my taking part in this study be kept confidential?**

All information that will be collected/ recorded about you during the course of the research will be kept strictly confidential. Direct quotations from the discussion may be used when writing up the research however these quotes will be anonymous. You will not be identifiable in any reports or publications. All documents related to the research (e.g., consent form), will be kept securely in a locked filing cabinet in the University of Sheffield. The electronic files will be stored on a password-protected computer. People in authority who want to make sure



that researchers are following the correct procedures might check these documents. These people will not pass your details to anyone else. The documents will be securely destroyed five years after the end of the study.

**14. What will happen if I don't want to carry on with the study?**

You are free to withdraw from the study at any time.

**15. What will happen to the results of the research study?**

It is anticipated that the results of the study will be published in peer reviewed journals as well as being presented at relevant conferences. You are entitled to receive a summary of the results if you wish.

**16. Who is sponsoring the study?**

The sponsor of this study is the University of Sheffield, United Kingdom.

**17. Who has ethically reviewed this study?**

North of Scotland Research Ethics Committee have reviewed the study and granted ethical approval on 15<sup>th</sup> April 2016.

**18. Contact for further information**

Please contact

Sara withers

Email: [sarah.withers@nhs.net](mailto:sarah.withers@nhs.net)

## Appendix 16: Consent Form of Recording

### Session for patient and physiotherapist

V 1.0 08.04.16

#### Consent Form (Patient) Recording of Physiotherapy session

**Title of the research:** Perception of cognitive behavioural therapy (CBT) in physiotherapy management for chronic low back pain (CLBP): a qualitative exploration of stakeholder views.

**Name of Researcher:** Latifa Alenezi

**Please indicate your agreement with your initials in the right hand-side boxes.**

|   |  |
|---|--|
| 1. I confirm that I have read and understood the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.                                 |  |
| 2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.   |  |
| 3. I understand that the information I provided will be securely stored and access to them will be restricted to the researchers working on this project. I understand that I will not be identifiable in the report(s) of this research. |  |
| 4. I understand that direct quotations which are anonymous will be used in research reports. I consent for publication of direct quotes.  |  |
| 5. I understand that, as part of the study, audio recordings of my physiotherapy session will be made. I consent to audio-record the physiotherapy session.   |  |

|  |  |
|--|--|
| 6. I consent that my identifiable data that has already been collected with my consent would be retained and used in the study in event of loss of capacity.   |  |
| 7. I understand that data collected during the study may be looked at by individuals from the University of Sheffield, from regulatory authorities or from the NHS Trust. I give permission for these individuals to have access to this data. |  |
| 8. I agree to take part in the above research project.   |  |

**The following statements are optional. Please indicate your choice by circling it.**

|   |     |    |
|---|-----|----|
| 9. I wish to be informed about the study results. | Yes | No |
|---|-----|----|

\_\_\_\_\_  
Name of participant

\_\_\_\_\_  
Name of person taking consent

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Signature

When completed, 1 for participant; 1 (original) for researcher site file; 1 to be kept in notes.

**Consent Form (Physiotherapist)  
Recording of Physiotherapy session**

**Title of the research:** Perception of cognitive behavioural therapy (CBT) in physiotherapy management for chronic low back pain (CLBP): a qualitative exploration of stakeholder views.

**Name of Researcher:** Latifa Alenezi

**Please indicate your agreement with your initials in the right hand-side boxes.**

|  |  |
|--|--|
| 1. I confirm that I have read and understood the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.                                      |  |
| 2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.  |  |
| 3. I understand that the information I provided will be securely stored and that access will be restricted to the researchers working on this project. I understand that I will not be identifiable in the report(s) of his research.          |  |
| 4. I understand that direct quotations which are anonymous will be used in research reports. I consent for publication of direct quotes.   |  |
| 5. I understand that, as part of the study, audio recordings of one of my routine physiotherapy session for CLBP patient will be made. I consent to audio-record the physiotherapy session.  |  |
| 6. I consent that my identifiable data that has already been collected with my consent would be retained and used in the study in event of loss of capacity.   |  |
| 7. I understand that data collected during the study may be looked at by individuals from the University of Sheffield, from regulatory authorities or from the NHS Trust. I give permission for these individuals to have access to this data. |  |
| 8. I agree to take part in the above research project.   |  |

**The following statements are optional. Please indicate your choice by circling it.**

|   |     |    |
|---|-----|----|
| 9. I wish to be informed about the study results. | Yes | No |
|---|-----|----|

Name of participant

---

Date

---

Signature

Name of person taking consent

---

Date

---

Signature

When completed, 1 for participant; 1 (original) for researcher site file; 1 to be kept in notes.

## **Appendix 17: Dissemination of the research findings and conclusion**

This appendix provides list of the national and international conferences where I presented the findings of my two studies (mixed methods systematic review and qualitative study) included in this thesis. It also presents the planned journal publications for these studies.

Dissemination of research findings

### ***Poster and an oral presentation in national and international conferences:***

**Alenezi L**, Croot L, Harris J. “The effectiveness of CBT for CLBP in Physiotherapy setting: Systematic Review”. ScHARR Soup Oral Presentation, University of Sheffield March 2016.

**Alenezi L**, Croot L, Harris J. “How cognitive behavioural therapy (CBT) is used in Physiotherapy management of chronic low back pain (CLBP): A Gap to be addressed. Oral Presentation, ScHARR PGR Conference, University of Sheffield, May 2016.

**Alenezi L**, Croot L, Harris J. “Reasons for variations in the effectiveness of cognitive behavioural therapy (CBT) in physiotherapy management of chronic low back pain (CLBP): Mixed Methods systematic review”. Poster Presentation, ScHARR PGR Conference, University of Sheffield, May 2016.

**Alenezi L**, Croot L, Harris J. “The use of cognitive behavioural therapy (CBT) for chronic low back pain (CLBP) in physiotherapy setting: An explanatory theory. PhD in 60 seconds, ScHARR PGR Conference, University of Sheffield, May 2016.

**Alenezi L**, Croot L, Harris J. “How cognitive behavioural therapy (CBT) is used in physiotherapy management for chronic low back pain (CLBP): A Gap to be addressed using Grounded Theory Approach”. Poster Presentation, WRDT fifth Annual Conference 2016, Data and Methods: Innovations and connections, University of Leeds June 2016.

**Alenezi L**, Croot L, Harris J. “Reasons for variations in the effectiveness of cognitive behavioural therapy (CBT) in physiotherapy management of chronic low back pain (CLBP): Mixed Methods systematic review”. Poster Presentation, Doctoral Academy Conference, University of Sheffield, June 2016. **Won a prize for best poster.**

**Alenezi L, Croot L, Harris J.** “Reasons for variations in the effectiveness of cognitive behavioural therapy (CBT) in physiotherapy management of chronic low back pain (CLBP): Mixed Methods systematic review”. Poster Presentation, Asian Congress of Physical Therapy - Malaysia Oct 2016.

**Alenezi L, Croot L, Harris J.** “Perceptions of Cognitive Behavioural Therapy in Physiotherapy Management for Chronic Low Back Pain: A Qualitative Exploration of Stakeholder Views”. Oral Presentation, 18th International Conference on Physical Therapy and Rehabilitation Sciences. Paris, France. January 2017.

**Alenezi L, Croot L, Harris J.** “Preliminary findings of the Perceptions of Cognitive Behavioural Therapy in Physiotherapy for Chronic Low Back Pain”. Oral Presentation, SchARR PGR Conference, University of Sheffield, May 2017.

***A journal publication plan:***

**Alenezi L, Croot L, Harris J.** (2019). Perceptions of Cognitive Behavioural Therapy in Physiotherapy for Chronic Low Back Pain: An Explanatory Grounded Theory.