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Exploring self-management of chronic low back pain in Saudi Arabia

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Exploring Self-management of Chronic Low Back Pain in Saudi Arabia

Ahmed Adem

A thesis submitted in partial fulfilment of the requirements of
Sheffield Hallam University
for the degree of Doctor of Philosophy

July 2017

Abstract

Aim: The main purpose of this research project is to explore both patients' and physiotherapists' perceptions and understanding of self-management for chronic low back pain (CLBP) in the Kingdom of Saudi Arabia (KSA) and moreover, to explore current physiotherapy practice for managing CLBP in KSA.

Methods: This research project used a mixed methods approach with sequential designs. The first section contains a quantitative study and the second section includes two qualitative studies. The quantitative section allowed exploration of current physiotherapy practices for CLBP management using a large population. The qualitative section has provided a more in-depth understanding of both patients' and physiotherapists' perceptions in regards to self-management and physiotherapy management for CLBP.

Results: In the current study, physiotherapists acknowledged the importance of exercise and advice. Moreover, these represented the most common treatment methods used in daily practice. However, patients' preferences for passive approaches, such as rest, massage and modalities were frequently reported. This shows conflict between physiotherapists and patients with CLBP in terms of the preferred approach for managing the disorder.

Physiotherapists' extensive use of modalities where evidence of effectiveness was lacking or insufficient was a common practice for physiotherapy management in patients with CLBP in the current research project. Moreover, physiotherapists and patients showed limited understanding of self-management as a concept.

Conclusion: Promoting self-management in daily physiotherapy practice appears to be a complex issue. It involves various factors, such as promoting an evidence-based practice culture among physiotherapists; a patient-centred approach; access to guidelines and evidence; and organisational support through developing policy, local guidelines and CPD training. This research presents a platform of recommendations for future researchers, professionals, educators and policymakers to enhance the quality of care for patients with CLBP in the KSA in general and may increase the adoption of self-management.

DECLARATION

I declare that the thesis 'Exploring Self-management of Chronic Lower Back Pain in Saudi Arabia' is original and was conducted on the basis of regulations set out by Sheffield Hallam University. The contents of the thesis have not been submitted to any other academic programme.

ACKNOWLEDGEMENTS

I would like to express my full gratitude to Allah who has helped me throughout the PhD journey and has guided me towards completion of this research project.

I would like to express my sincere gratitude to my supervisors Dr Stephen May and Dr Karen Kilner for their support and guidance in helping me to complete this work.

This project would not have been possible without the support of many other people. My parents: words cannot describe my love and appreciation for them and the enormity of their support, prayers and encouragement throughout my life. My brother, sisters, nephew and nieces: I shall be eternally grateful for their patience and support.

I would like to thank my colleagues, Sheffield Hallam University staff, patients, physiotherapists and all organisations that helped and supported this research project.

I would like to thank all my friends, in particular, Thamer, Abdullah and Nabeel, for their support in enabling me to complete this research project. Last, but not least, my beloved brother Tauqeer, there are no words to convey how much I love and respect him, a man of principles; may Allah bless him and his family. Without his advice and support in life, completing this research project would have been impossible.

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List of Abbreviations

ASMP	Arthritis Self-Management Program (Stanford)
BG	Back pain guideline or advice
CASP	Critical Appraisal Skills Programme
CB	Community-based
CBT	Cognitive behavioural therapy
CD	Chronic Disease
CDSI	Central Department of Statistics and Information
CKP	Chronic knee pain
CLBP	Chronic low back pain
CO	Condition
CPD	Continuing professional development
CW	Chronic whiplash
E	Consensus document developed by an expert panel
F	Female
FM	Fibromyalgia
HCP	Health care professional
JPE	Joint protection education
KSA	Kingdom of Saudi Arabia
LBP	Low back pain
LS	Lifestyle
MSK	Musculoskeletal
M	Month
MBT	Mind-body therapy
MDT	McKenzie
MRC	Medical Research Council
MT	Multidisciplinary team
MTM	Multiple theoretical models
NICE	National Institute for Health and Care Excellence
OA	Osteoarthritis
OT	Occupational therapists
P	Psychological
PA	Physical activity or exercise
PAP	physical activity program (Light)
PBL	Problem-based learning
PE	Pain education
PhD	Doctor of Philosophy
PT	Physiotherapy
RA	Rheumatoid arthritis
RACGP	Royal Australian College of General Practitioners
RCT	Randomised control trials
ROM	Range of motion

SACMA	Saudi Arabian Cultural Mission in Australia
SCT	Social Cognitive Theory
SE	Strength training (exercise)
SE+	Self-efficacy
ST	Standard treatment
SPTA	Saudi Physical Therapy Association
TENS	Transcutaneous electrical nerve stimulation
TTBC	Trans-theoretical Behaviour Change Model
UK	United Kingdom
UN	United Nation
US	United States
USBJI	United States Bone and Joint Initiative
VAS	Visual analogue scale
W	Week
WCPT	World Confederation for Physical Therapy
WHO	World Health Organization
WL	Waiting list

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1. Chapter One: Introduction

The main purpose of this research project was to explore patients' and physiotherapists' perceptions and understanding of self-management for chronic low back pain (CLBP) in the Kingdom of Saudi Arabia (KSA). Moreover, the researcher also investigated current physiotherapy practices used for the management of CLBP in the KSA.

This chapter presents the background information, country profile, structure of the healthcare system and current physiotherapy practice in the KSA. It also delineates the rationale for the research project, research questions, research objectives and structure of the current research project.

1.1 Background

The number of chronic health conditions is increasing, and current health systems are struggling to deliver effective and efficient services (Wagner et al. 2001; Holman and Lorig 2004; WHO 2015). This could be because current health systems need to adopt new strategies, such as patient empowerment, self-management and redefinition of the roles and relationships between healthcare providers and patients to deal with chronic conditions (Nolte and Mckee 2008; Van olmen et al. 2011).

In the last two decades, new models of care that are mainly concerned with self-management of chronic conditions have been developed and used in developed countries. The three main models of self-management are the Stanford model, the Expert Patient Programme and the Flinders Model (Lorig et al. 1999; Wilson 2001; Battersby et al. 2008). Each of these models was developed in a different country and involves different approaches to self-management. The adoption of a self-management model is influenced by many factors, such as politics, cost, social

issues and the healthcare system. For example, in the United Kingdom (UK), the Expert Patient Programme model was developed by the Department of Health to shape the healthcare system and enhance the quality of services (Kennedy et al. 2007; NICE 2008).

There is no gold standard definition of self-management (Barlow et al. 2002). This may lead physiotherapists to implement various models of self-management. In addition, in some circumstances, only some aspects of self-management are being used. This could negatively influence the effectiveness of the self-management programme.

The most commonly used definition of self-management is that provided by the Centre for Advancement of Health: “[patients] engaging in activities that protect and promote health, monitoring and managing symptoms and signs of illness, managing the impacts of illness on functioning, emotions and interpersonal relationships and adhering to treatment regimes in partnership with health professionals and community resources” (Gruman and Von 1996, p1). Previous studies have shown that numerous researchers and guidelines have frequently adopted this definition (Browning and Thomas 2005; RACGP 2008; Richardson et al. 2014; Chang and Johnson 2014), which could be because it contains the key components of self-management that have been previously discussed, such as medical management, activity and life management (management role) and emotional management (Lorig and Holman 2003; Linsley et al. 2011).

In the United Kingdom, the Department of Health has defined self-management as “The individual's ability to manage the symptoms, treatment, physical and psychosocial consequences and lifestyle changes inherent in living with a long term

disorder” (Department of Health 2006,p6).Wilkinson and Whitehead (2009, p1,145) developed a more comprehensive view of self-management as being an “individual’s ability, in conjunction with family, community and the appropriate health care professionals, to successfully manage the symptoms, treatment, physical, psychosocial, cultural and spiritual consequences and inherent lifestyle changes required for living with a long-term chronic disease”. It therefore appears that there is no consistent definition of self-management, with regard to some aspects, which may negatively affect its effectiveness.

The present study could help to provide further information regarding patients’ and physiotherapists’ perceptions and understanding of self-management for CLBP in the KSA, which may assist in developing a wider understanding within a unique culture. Lorig and Holman (2003) reported that various factors may influence the effectiveness of self-management, including programme content, but that it is not limited to the following factors: patient acceptance, patient characteristics (culture, age) and delivery method.

1.1.1 Patients' experience with Low back pain (LBP)

A systematic review and metasynthesis of CLBP patients’ experiences and the effects of LBP on individuals’ lives have been published (Snelgrove and Lioffi 2013; Froud et al. 2014). The main themes that emerged were comparable in both reviews (see Table 1). This offers support regarding the credibility of the reviews findings (Shenton 2004), thereby improving the trustworthiness of the themes that emerged in both reviews. The most common theme is the effect of CLBP on people’s lives. However, each review presented the influence of CLBP differently: In one, it was

described as one theme with subthemes, and in the other, it was put forward as several separate themes.

The impact of LBP was not found to be limited to biomedical factors, such as loss of function/activities or pain, in either review. Interestingly, social factors, such as the effect of LBP on patients' relationships with family and friends, were discussed extensively in both sources (Snelgrove and Lioffi 2013; Froud et al. 2014). Patients' concerns about letting others down because of pain when participating in certain social activities led them to isolate themselves. This highlights the importance of using a multidimensional approach, such as a multidisciplinary biopsychosocial model, in long-term CLBP management (Kamper et al. 2015).

It has also been found that patients are concerned about the credibility and validation of CLBP (stigma), especially when they have no clear diagnosis. This could negatively affect how people around them, including employers and healthcare professionals, perceive their reports of pain (Bowman 1994; Borkan et al. 1995), thereby possibly damaging the patient–practitioner relationship. In one study, some physiotherapists were found to believe that patients with CLBP became more dependent on physiotherapists and that sometimes these patients became attention seekers (Synnott et al. 2015). This shows the importance of patients' involvement in managing their own health and learning coping strategies. At the same time, physiotherapists could consider multidimensional approaches, such as the inclusion of psychological techniques like cognitive behavioural therapy (CBT). This may enhance patients' understanding of their condition and move them toward coping rather than focussing on recovery.

It seems that patients' acceptance of the lack of a clear diagnosis of LBP and of the nature of the pain are the first steps in learning to cope with CLBP (Froud et al. 2014). Studies have shown that patients who accepted this reality were better able to cope with the condition (Strong and Large 1995; Wade 2003). However, patients have adopted various methods for managing LBP, such as avoiding certain postures, not participating in certain activities, prioritising activities and faith (Bowman 1994; Strong and Large 1995; Skelton et al. 1996; Ong et al. 2004; Busch 2005; Young et al. 2011).

Table 1. Themes Concerning Patients' Experience of Low Back Pain.

Reviews	Froud et al. (2014)	Snelgrove and Lioffi (2013)
Themes	Activities	The effects of chronic LBP (CLBP), including functional limitation, psychological issues, stigma
	Relationships	Relationships with significant others: - Health professionals and the organisation of care - Family and friends
	Work	Coping with CLBP
	Stigma	
	Changing outlook	

Based on data from Snelgrove and Lioffi (2013); Froud et al. (2014)

Several factors influence patients' ability to cope with CLBP, including culture and beliefs (Wade 2003; Snelgrove and Lioffi 2013). Patients with a biomedical perception of their condition seem to be more disappointed with the treatment results (Snelgrove et al. 2013). This may be due to the limitations of the biomedical treatment model in terms of its efficacy in managing pain and enhancing function. However, organisational factors and elements of the patient–healthcare provider relationship, such as miscommunication, may also have a negative effect on patients' rehabilitation (Wade 2003). Indeed, 96% of physicians in urban areas in

South Africa think there is a communication problem between patients and their physicians that is due to misunderstandings or to each understanding issues in a different way (Papaikonomou 1991).

1.1.2: Self-management from a theoretical and practical perspective

From a theoretical perspective, it appears essential to understand the concept of patient-centred, patient empowered participation in decision-making, and in the patient-therapist relationship, since this may help healthcare workers to implement the theories in such a manner that patients' adoption of self-management is improved. This section focuses on the critical appraisal concept of self-management and related concepts, such as patient-centred, patient empowerment, theories of behavioural change, participation in decision-making and the patient-therapist relationship, from a theoretical perspective.

It is important to understand both the theoretical and the practical reasons that have informed self-management and have shaped its development. In recent years, healthcare systems have been transformed in response to the increase of chronic conditions. For example, a traditional healthcare professional-patient relationship that adopted a passive approach, in that patients were mainly passive recipients, has been replaced with a partnership relationship (Holman and Lorig 2000). The new paradigm emphasises a patient-centred and patient-healthcare professional partnership that indicates that patients play a major role in decision-making and in managing their condition(s) (Grady and Gough 2014). This partnership is based on collaboration between patients as experts on their unique experience and healthcare professionals as experts in medical conditions (Bodenheimer et al. 2002).

'Patient-centred' is described as process of care that focuses on the following themes: "patient participation and involvement, the relationship between the patient and the healthcare professional, and the context where care is delivered" (Kitson et al. 2013). Moreover, subthemes, such as patient autonomy, preferences, values, open communications, sharing information and responsibility, policy and access to services were discussed as elements of a patient-centred approach in a previous review (Kitson et al. 2013). It appears that patient-centricity could help healthcare professionals to implement a more comprehensive approach that considers patients' social and psychological concerns, in addition to those of a biological nature.

A key element of self-management, as discussed in the previous section, includes the patient-healthcare professional relationship (Gruman and Von 1996; Wilkinson and Whitehead 2009). This may be due to the importance of establishing a patient-centred service that promotes effective communication. Indeed, Fu et al. (2016) emphasised that effective communication between patients and practitioners is key to establishing a partnership that could influence the adoption of self-management. Thus, open communications may help patients to share their expectations and preferences with their health practitioner; the subsequent provision of information and skills that help them to adopt self-management could then lead to patient empowerment. It has been reported that patient empowerment can be achieved through patient-centricity (Holmstrom and Roing 2010).

It appears necessary to understand the nature of the patient-healthcare professional relationship; patient perceptions with regard to expectation and preference of treatment shape successfully promote self-management. One review reported that factors such as a lower education level, severity of condition and older age tend to result in a passive role in decision-making and treatment involvement (Benbassat et

al. 1998). However, the identification of participant expectations and preferences requires effective communications to aid in the understanding of the shape and nature of the patient-healthcare practitioner relationship and the treatment method.

Understanding theories of behavioural change could help various stakeholders, including researchers, healthcare providers and healthcare policymakers, in developing strategies to enhance the effectiveness of a self-management programme. This is because self-management emphasises empowering patients to take care of themselves by teaching them the necessary skills to identify and solve problems (Grady and Gough 2014). Moreover, it promotes engaging in exercise and adopting an active lifestyle (Hibbard and Gilbert 2014).

The most eminent behavioural change theories (models) in health and social care include the health belief model, the theory of planned behaviour and the transtheoretical model, presenting a synthesis of available evidence.

Behavioural change theory can be categorised into two main spectra. First, there are theories that seek to predict specific behaviours; these mainly discuss the accomplishment of the identified behaviour, regardless of the amount of time it takes. These include many behavioural change models, such as the health belief model and the theory of planned behaviour. Second, behaviour stage change theories emphasise the behaviour change phase that a person experiences during the process of adopting new behaviour; these include the precaution adoption process model and the transtheoretical model.

The health belief behaviour model is the most frequently used model in health behaviour research (Ronis 1992). This model demonstrates the probability that an individual will adopt a certain health behaviour based on their perception of severity,

benefits, perceived susceptibility and barriers. Factors such as self-efficacy, personal characteristics and cues to actions could shape patients' perceptions of severity, benefits, perceived susceptibility and barriers (Hayden 2013). Thus, healthcare professionals may help patients to prevent, or promote, particular behaviour that could improve individual health status by understanding a patient's circumstances and perceptions, and providing them with sufficient information and skills.

Two concepts explain the process that influences the effect of outcome expectancy on behaviour, namely, self-efficacy and locus of control. Self-efficacy focuses on the person's ability to accomplish a specific task (Seyde et al. 1990), whereas locus of control addresses the individual's perception and belief in a certain response to produce the change or outcome (Thompson 1981). Therefore, use of the health belief model could facilitate the process of identifying patients' perceptions of their ability to accomplish a particular task. The negative perspective or passive approach is then modified to a positive view, promoting an active management approach and sharing the responsibility in taking care of themselves, particularly when managing a chronic condition, such as CLBP.

The health belief model was developed in the United States in the 1950s (Steckler et al. 2010). Most of the medical conditions it addressed were acute conditions, as well as the prevention of infections such as tuberculosis, and this obviously influenced the development of the model. For example, patients tend to adopt particular behaviour or follow advice that may minimise harm or severity. The health belief model explains this process as expectancy representing perceived likelihood, severity of threat and health behaviour (following a practitioner's advice or adopting a

particular behaviour) represents barriers to taking action and perceived benefit (Glanz et al. 2015).

The main limitation of the health belief model is that it does not appear to be suitable for providing clear understanding that helps to manage chronic conditions (Zimmerman and Vernberg 1994). This could be because the nature of acute conditions was dominant in the required theory of the 1950s, which focused on patients' perceptions of a harmful condition and their ability to accomplish a task that minimised potential harm or severity, irrespective of the importance of self-efficacy, which was introduced later in this model as an outcome measure to assess patients, focusing on an individual's ability to accomplish a specific task. The health belief model struggles to consider behaviour change as a dynamic process, and multiple factors, such as social, economic, biological, environmental (access to healthcare, the healthcare model, psychological and emotional) could change and influence patient behaviour.

Stage theorists propose that behaviour change is a dynamic process that includes different stages, and that each stage requires a specific intervention (Weinstein et al. 1998). This model appears to be more flexible than continuum theories, and includes planned action behaviour, which predicts behaviour based on the intention to accomplish a specific act. The transtheoretical model is a commonly used stage theory. This model comprises five stages of health behaviour change, namely, precontemplation, contemplation, preparation, action and maintenance (Schwarzer 2008). The model stages are in a logical order and provide further information and insight into the process of behaviour change, particularly in chronic diseases such as CLBP, which require self-management to maintain the behaviour.

The development of the transtheoretical model initially focused on smoker behaviour stage change (Prochaska and DiClemente 1983). The researcher has explained and further developed the transtheoretical model process of change, and has widely adopted this model in both biological and mental health (Glanz 2015). This is because the transtheoretical model shows credibility and a strong theoretical basis that assists in the development of the practical process of health change (Hall and Rossi 2008).

The transtheoretical model has been described as a health behaviour model that focuses on assessing and achieving particular health outcomes; this contrasts with other cognition behaviour models that focus on observing and explaining particular behaviour (NICE 2006). The structure of the transtheoretical model appears to be more comprehensive than other behaviour models, such as the health belief model (Noar and Zimmerman 2005). The assessment and comparison with the behaviour model was based on the following elements: self-efficacy, intention; risk-related beliefs and emotional responses; attitudinal beliefs; behavioural control; behavioural control beliefs; normative beliefs; and commitment and planning.

In conclusion, predicting human behaviour is extremely complex, and understanding health behaviour change interventions requires a more comprehensive approach. Thus, a combination of the two spectrums of human behaviour theory, namely prediction behaviour theories and stage theories, appears to be more effective. Elements including patient beliefs, intentions, motivations and self-efficacy could be useful in predicting health behaviour change. However, individual behaviour (such as self-management) may change over time due to a variety of factors, such as those of an economic, social and environmental (healthcare system, transportation) nature, as well as personal reasons. Thus, combining stage theories and prediction

behaviour theories may be more appropriate when attempting to understand health behaviour change in the context of chronic conditions, such as CLBP, which require a lifelong self-management approach.

1.2 Country profile

The KSA has an area of 2 206 714 square kilometres (UN 2014). The current estimation for the total population is 31 742 308 (CDSI 2016). The World Health Organization (WHO) has reported that around 85% of Saudis live in urban areas (WHO 2012). The population in two regions, Riyadh and Makkah, is equal to 50% of the total population of the country (CDSI 2010).

The 2016 census in the KSA showed that most of the population (72%) was aged 16–64 years (CDSI 2016). Those under 15 years made up 24.8% of the population, while few people were older than 65 years, at 3.2%. The KSA is a developing country; according to the World Bank, it is classified as a high-income country (World Bank 2014). It appears that KSA has different cultural and demographic characteristics to other developed countries, which tend to have an older population (Bongaarts 2009).

The main elements of Saudi culture stem from Islam and Arabic customs; two Muslim holy cities are located in the KSA (SACMA 2017). This may cause people to adopt a more Islamic lifestyle in both personal and state level. However, it also seems that Saudi Arabia may be considered multicultural, as a recent census in the KSA showed that the number of non-Saudi citizens comprised 11 677 338 residents (CDSI 2016).

1.3 Structure of the healthcare system and current physiotherapy practice in the KSA

It has been reported that 69% of the population of the KSA is covered by national health services (Ministry of Health), and the remaining population is covered by private healthcare insurance (WHO 2006). A study published in 2005 estimated that the number of people who were served by public health care in Saudi Arabia was around 15.6 million (AlAhmadi and Roland 2005). It appears that the primary funding body for health care in the KSA is the government; this is like most European countries, where the main source of financing for health care is public funds (Mossialos et al. 2002). Thus, it is important to consider the cost effectiveness of healthcare services to ensure that high-quality health care is delivered while minimising expenses.

The percentages of chronic noncommunicable disease have increased in recent years to reach 71% of total mortality in KSA (WHO 2013). The increase in chronic noncommunicable diseases is a leading factor heightening the demand for healthcare services and poses an enormous challenge for healthcare services in developing countries (Islam and Blswas 2014). Moreover, noncommunicable diseases are considered the main cause of death and disability in developing countries, resulting in negative social and financial effects (Robles 2004). Thus, it seems essential to adopt a new national strategy for healthcare services in developing countries to provide comprehensive and efficient services.

Limited data are available concerning the prevalence of musculoskeletal (MSK) disorders in the KSA at the national level. However, several studies focussing on specific population groups, such as physiotherapists, dentists, construction workers

and nurses, have reported medium to high prevalence rates of MSK disorders (AL-Eisa et al. 2012; Meo et al. 2013; Attar 2014; Aljanakh et al. 2015).

A community-based study reported that the prevalence of LBP in the KSA is 18.8% (Al-Arfaj et al. 2003). However, this study was conducted in one small region, and therefore does not seem to represent the total population of the country. Moreover, data were collected in 1995, which means that up-to-date data are needed, especially since LBP has increased worldwide in the past three decades (Hoy 2012).

Physiotherapy services are delivered in both the public and private sectors. In the public sector, physiotherapists deliver care to both in-patients and out-patients in acute hospitals and several rehabilitation centres. In the private sector, physiotherapy services are available in hospitals, rehabilitation centres and physiotherapy clinics. In recent years, more private specialist centres, such as paediatric physiotherapy centres, orthopaedic clinics and sports clinics, have begun to operate. However, physiotherapists can only treat patients after receiving a referral from a doctor.

Health care tends to be based on the biomedical model in KSA. This may be due to the influence of higher education in medical and healthcare schools in the Middle East. However, a shifting strategy to adopt a more patient-centred approach was introduced recently by the minister of health to enhance the quality of health care. Although limited research investigated the awareness and influence of the patient-centred approach among healthcare professionals and patients in the KSA, a systematic review investigated the quality of health care in university hospitals reported that the main factors that negatively influence delivering patient-centred

services were lack of communication with patients in terms of providing them with enough information and communicating in the Arabic language (Aljuaid et al. 2016).

In the KSA, patient involvement in decision-making appears to be limited; physiotherapists have adopted a paternalistic approach (AlKhatrawi 2013). A shared responsibility between patient and therapist is considered important in helping patients successfully manage their chronic condition (Cramm and Nieboer 2014). Thus, it appears that healthcare professionals in the KSA have limited awareness of the patient-centred approach, and that further training and local guidelines are required to promote this concept.

The use of passive approaches, such as hot pack, manual therapy and electrotherapy, along with active techniques, such as the McKenzie or exercise approaches, were common among physiotherapists, according to the older musculoskeletal physiotherapy literature (Jette and Delitto 1997; Foster et al. 1999). The reasons for using electrotherapy in physiotherapy practice may be a limited awareness of evidence-based practice and a lack of guidelines.

The McKenzie approach is the most popular physiotherapy diagnosis and treatment method for CLBP, and was developed by Robin McKenzie in 1981 (McKenzie and May 2003). The main concepts of assessment are based on pain pattern and direction, for example, centralisation refers to pain that has become more central, and decreased referred pain during moving in a particular direction - known as directional preference (Werneke and Hart 2001). A systematic review has reported that the McKenzie approach is more effective than passive approaches for treating acute LBP but limited evidence is available with regard to CLBP (Machado et al. 2006).

The most common passive approach used in manual physiotherapy is the Maitland Concept, which is based on passive grade (1–4) mobilisation (Farrell and Jensen 1992). Moreover, the Mulligan concept has become a common technique in manual therapy used by physiotherapists (Exelby 2002). This concept presents two main mobilisation methods: passive oscillatory mobilisations and sustained mobilisations with active movement for treating LBP (Mulligan 2004). Using both electrotherapy and mechanical devices in physiotherapy has traditionally been considered as common practice (Watson 2000). Electrotherapy, also known as electro-physical agents, has included multiple forms, such as transcutaneous electrical nerve stimulation (TENS), ultrasound, interferential therapy and hot pack (Porter 2013). Porter (2013) classified electro-physical agents into three main categories; (1) electrical stimulation modalities, such as TENS and interferential therapy; (2) thermal modalities, which include infrared irradiation, shortwave diathermy, microwave diathermy, ultrasound and laser; (3) Non-thermal modalities, such as [Pulsed] ultrasound low intensity, pulsed ultrasound, [Pulsed] shortwave therapy and [Pulsed] laser therapy.

1.4 Rationale of the research project

MSK conditions represent a common cause of chronic pain and disability around the world (Woolf 2012; Vos et al. 2013). A project that included researchers from 50 countries studying the global burden of diseases ranked MSK conditions as the second most common cause of disability (IHME 2013a). Therefore, MSK conditions have become a major health problem in both developed and developing countries (IHME 2013b). The increase in chronic conditions highlights the need to reform healthcare systems based on cooperation between healthcare policymakers,

researchers, healthcare professionals and patients (Brooks 2004). This would enhance the quality of health care and ensure accountable and efficient service.

MSK conditions also exert a significant economic burden on global healthcare systems (WHO 2003a). For instance, in 2011, the estimated total cost (direct and indirect) of MSK conditions in the United States (US) was US \$873.8 billion, which equals 5.7% of the US gross domestic product (USBJI 2014). In South Korea, the total cost of MSK conditions was US \$6.89 billion (Oh et al. 2011).

LBP is one of the most common MSK conditions around the world. In a 1-year period, the prevalence of LBP across the globe has been reported as approximately 38% (Hoy et al. 2012). It is estimated that up to 59% of the population of the UK has experienced LBP at a certain stage of life (Hillman et al. 1996; Waxman et al. 2000).

Management of LBP has multiple dimensions, and various members of a multidisciplinary team in the healthcare professions take part in this process (NICE 2009). The amount and type of this involvement differs from one healthcare system to another. For example, physiotherapists in the UK can treat patients without a physician's referral, whereas this is not permitted in other countries, such as Japan, Germany and Greece (WCPT 2013). Healthcare systems in the KSA request that patients are only treated by a physiotherapist after receiving a physician's referral.

Physiotherapeutic management of LBP includes various approaches, which can broadly be categorised as active, passive and self-management techniques. It seems that self-management has become accepted among patients in the UK (May 2007; Cooper et al. 2008). That may be because self-management gives patients a feeling of independence (Segal 1998). Moreover, providing patients with enough

information and tailoring their treatment based on individual needs can help to enhance patient empowerment.

Most studies that have investigated patients' and physiotherapists' perceptions of patients' empowerment and involvement in decision making have been conducted in Western society. Many guidelines have been published in developed countries, such as the UK, to promote patient empowerment (Department of Health 2000).

A recent study conducted in the KSA showed that the physiotherapists there tend to be more paternalistic in their approach regarding decision making with patients (AlKhatrawi 2013). Physiotherapists' perceptions of the patient–therapist relationship is important, as this could affect patients' beliefs about and trust in therapists, which could affect their adherence to treatment. Al-Eisa (2010) reported a high level of non-attendance (60%) to physiotherapy treatment among females diagnosed with LBP in the KSA. According to the WHO, adherence 'requires the patient's agreement to the recommendations' (WHO 2003b, p4). This means that patients should have enough information and advice to empower them to take an active role in decision making. To achieve this, two-way, productive communication between patients and physiotherapists is required. To improve the quality of service, it is important to identify both service users' and healthcare professionals' beliefs and expectations concerning healthcare services (NICE 2012; Mosadeghrad 2014). This could help to increase adherence to physiotherapy management, thereby leading to a decrease in the cost of services.

Many healthcare workers in the KSA are from other countries, such that Arabic is their second language. Currently, physiotherapist registration in the KSA does not require any level of proficiency in Arabic. This could negatively affect communication

between patients and physiotherapists. Thus, patient safety and the quality of service may be at risk.

There is also a lack of local policies and guidelines related to physiotherapy in the KSA; if such policies were implemented, it would help physiotherapists to work within a clear scope of practice. The existence of such local guidelines could maximise patient safety and help to deliver an accountable service, thereby leading to an improvement in the overall quality of facilities. Moreover, among the general public in the KSA, there is a misconception that physiotherapists are masseurs or sports trainers. This raises questions about patient trust and the expectations patients have of physiotherapists, including their acceptance and adoption of self-oriented models of care, including the self-management approach often introduced and taught by physiotherapists.

In the current research project, the researcher investigates the current physiotherapy practices used for the management of CLBP in the KSA. Moreover, the study explores both patients' and physiotherapists' perceptions and understanding of self-management concerning CLBP in the KSA.

1.5 Research questions

The research questions developed for the current study are as follows:

- What are the characteristics and effectiveness of self-management strategies and the theoretical models used to support these interventions for patients with MSK conditions, as described in the literature?
- What is the current physiotherapy practice for managing CLBP in the KSA?
- What are patients' perceptions of CLBP self-management in the KSA?

- What are physiotherapists' perceptions of CLBP self-management in the KSA?

1.6 Research objectives

The research objectives for the present study are as follows:

- To provide a critical and systematic review of (1) literature regarding characteristics and effectiveness of self-management strategies and the theoretical models used to support these interventions for patients with musculoskeletal conditions and (2) literature related to patients' and practitioners' perceptions of the influence of patient–practitioner partnership relations on the patients' ability to self-manage CLBP;
- To explore current physiotherapy practices for treating CLBP in the KSA;
- To explore patients' perceptions, beliefs, expectations and satisfaction levels regarding the physiotherapeutic management of CLBP, specifically self-management. Achieving this aim will help to identify patients' expectations, preferences and understanding of physiotherapeutic management for CLBP, including self-management, in the KSA; and
- To explore physiotherapists' perceptions and understanding of self-management, particularly in treating patients who have CLBP.

- **1.7 Structure of the research project**

- **1.7.1 section one (Chapter Two)**

In the first section, the researcher conducted a systematic and critical review of the literature regarding the effectiveness of self-management models and strategies in MSK physiotherapy. In addition, the findings of a recent

metasynthesis of patients' and physiotherapists' perceptions of self-management of CLBP are discussed. This section will enhance the researcher's understanding of self-management and identify the knowledge gap.

- **1.7.2 section two (Chapter Four)**

The primary purpose of this study is to explore current physiotherapy practices for treating CLBP in the KSA. The secondary aim is to identify physiotherapists' levels of familiarity with self-management concepts and their elements.

- **1.7.3 section three (Chapters Five and Six)**

The third section includes two qualitative studies. The aim of the first study is to explore patients' perceptions regarding the physiotherapeutic management of CLBP, specifically through self-management, via semi-structured interviews. Achieving this aim helped to identify patients' expectations, preferences and understandings concerning physiotherapeutic management for CLBP, including self-management, in the KSA. The aim of the second study is to explore physiotherapists' perceptions and understandings of self-management, particularly in treating patients with CLBP.

- **1.7.4 Discussion and conclusion (Chapter Seven)**

This chapter presents and discusses the findings of this research project on elucidating the current physiotherapy management in the KSA for CLBP, including self-management; moreover, it delineates future research priorities in the KSA to enhance quality of physiotherapy services for CLBP.

2. Chapter Two: Literature Review

2.1 Introduction

This chapter presents a systematic and critical review of the literature regarding the effectiveness of self-management models and strategies in musculoskeletal physiotherapy. In addition, a finding of recent meta-synthesis of patients' and physiotherapists' perceptions of self-management of CLBP was discussed.

The number of chronic health conditions is increasing, and current health systems are struggling to deliver effective and efficient services (Holman and Lorig 2004).

This could be because current health systems need to adopt new strategies, such as patients' empowerment, self-management, and redefining the roles and relationships between health care providers and patients, in order to deal with chronic conditions.

Recent systematic reviews have evaluated the effectiveness of self-management programmes for chronic MSK conditions (Du et al. 2011; Carnes et al. 2012). The aim of the current review is to update a previous review and to answer the following question:

What are the characteristics and effectiveness of self-management strategies and the theoretical models used to support these interventions for patients with musculoskeletal conditions in terms of pain, function, quality of life, and self-efficacy?

2.2 Systematic review

2.2.1 Search strategy

This review used a strategy published by the NHS Centre for Reviews and Dissemination and PRISMA guidelines (University of York 2009; Moher et al. 2009).

An electronic search was conducted in the following databases: CINAHL, MEDLINE,

AMED, ScienceDirect, and Scopus. Different combinations of keywords and Boolean logic were used (see Table 2). However, the search process was limited to articles published between 2009 and 2015 because the aim of the current review is to update a previous review (Carnes et al. 2012). To avoid missing any articles, Google and Google Scholar were also searched. Moreover, the reference lists of selected articles were screened to add relevant articles. In addition, citation indices were used to eliminate missing any relevant articles.

The retrieved articles were screened by title and abstract, and all articles related to the effectiveness of self-management strategy and the theoretical models used to support these interventions in musculoskeletal were selected and included in the list. Articles that might be related to the effectiveness of self-management programmes in MSK were also included in the list.

Inclusion and **exclusion** criteria were applied to filter the identified articles. Any article was required to meet all the following inclusion criteria: (1) randomised controlled trial; (2) a study that required the self-management programme to contain the following components, (a) psychological aspect (behaviour or cognitive) and (b) exercise or promoting physical activity; (3) the self-management programme was designed or delivered by health care professional or multidisciplinary team; (4) effectiveness of self-management has been assessed compared with standard therapy or waiting list patients; (5) all articles related to self-management programmes in musculoskeletal; (6) patients with chronic MSK conditions (3 months or more).

The exclusion criteria were as follows: (1) studies in which pain or disability are not the main outcome; (2) studies that include only participants who are less than 18

years old; (3) studies that include patients who have experienced recent accidents, spinal surgeries, or other serious conditions; (4) pilot studies; (5) studies that only include a single intervention, such as manual therapy, passive treatment, or basic patient education (leaflet); (6) non-English studies.

Table 2: literature search strategy:

Search stages	Database	CINAHL	MEDLINE	AMED	ScienceDirect	Scopus	Total
	Keyword						
1	Self-management	6,302	32,011	485	12,121	15,020	
2	self-care	29,648	32,011	2145	14,817	42,981	
3	patient education	59,815	84,382	1907	23,860	316,488	
4	self-efficacy	16,160	22,269	1126	9,985	34,676	
5	self-help	2,422	15,330	491	10,402	21,584	
6	Chronic musculoskeletal pain	550	1,079	97	891	6,535	
7	chronic musculoskeletal condition	21	49	2	356	2,387	
8	osteoarthritis	20,348	61,059	2827	15,587	88,082	
9	rheumatoid	19,723	119,567	2111	17,757	171,650	
10	arthritis	32,372	184,313	3676	41,855	252,201	
11	back pain	24,717	47,896	6112	11,465	76,042	
12	hip pain	1,588	5,027	123	3,125	23,425	
13	knee pain	3,288	8,605	507	5,380	33,679	
14	shoulder pain	3,906	8,570	801	3,857	24,374	
15	neck pain	6,000	11,307	1272	4,326	33,210	
16	fibromyalgia	4,751	8,708	1776	2,775	13,987	

Search stages	Database	CINAHL	MEDLINE	AMED	ScienceDirect	Scopus	Total
	Keyword						
17	Randomized controlled trial	25,803	80,263	4353	46,318	557,161	
18	Stage 1 (OR) Stage 2 (OR) Stage 3 (OR) Stage 4 (OR) Stage 5	102,087	144,869	5402	28548	399,714	
19	Stage 6 (OR) Stage 7 (OR) Stage 8 (OR) Stage 9 (OR) Stage 10 (OR) Stage 11 (OR) Stage 12 (OR) Stage 13 (OR) Stage 14 (OR) Stage 15 (OR) Stage 16 (OR)	87,492	311,395	15848	751,660	475,389	
20	Stage 17 (AND) Stage 18 (AND) Stage 19	206	343	79	371	1640	
21	Stage 20 limiting publication (from 2009 to 2015)	118	194	36	258	870	1482

2.2.2 Study selection

Two sections of filtering were utilised to identify articles that were included in the review. In the first section, the main researcher (AA) conducted an initial search using different combinations of keywords and Boolean logic, as described in the previous section. Articles were screened by title and abstract, and all articles related to self-management programmes and theoretical models in the musculoskeletal

system selected were included in the list. This list also included articles that might be related to self-management programmes.

Further screening by two independent reviewers (AA and TA) filtered the retrieved articles; their assessment was based on the inclusion and exclusion criteria. Each reviewer independently reviewed the remaining articles and assessed if they met the inclusion and exclusion criteria. Any article selected in the current review needed to be agreed upon by both reviewers. However, if agreement between the two reviewers became difficult, a third independent reviewer (SM) assessed the articles and the final decision was determined by consensus.

The study selection process was presented in a flow chart. Each stage of the process was demonstrated using a number of articles that were either included or excluded, along with justification for doing so (see Figure 1). Finally, all included 32 studies are briefly displayed in table 3, including information regarding their research methods and results.

2.2.3 Quality Assessment

Two independent reviewers extracted data. Moreover, the advisory team included two senior researchers with different backgrounds in MSK physiotherapy and statistics. This is to minimise the possibility of bias and enhance the quality of the study. Researchers used a standardised critical appraisal list that has been published by Cochrane and used in previous systematic reviews of self-management programmes for chronic musculoskeletal pain conditions (Higgins and Green 2011; Du et al. 2011). This helped the researchers identify bias in the primary studies and minimise potential bias in the current review.

The Cochrane critical appraisal list includes the following items: randomisation process, allocation concealment, blinding of participants and personnel, blinding of

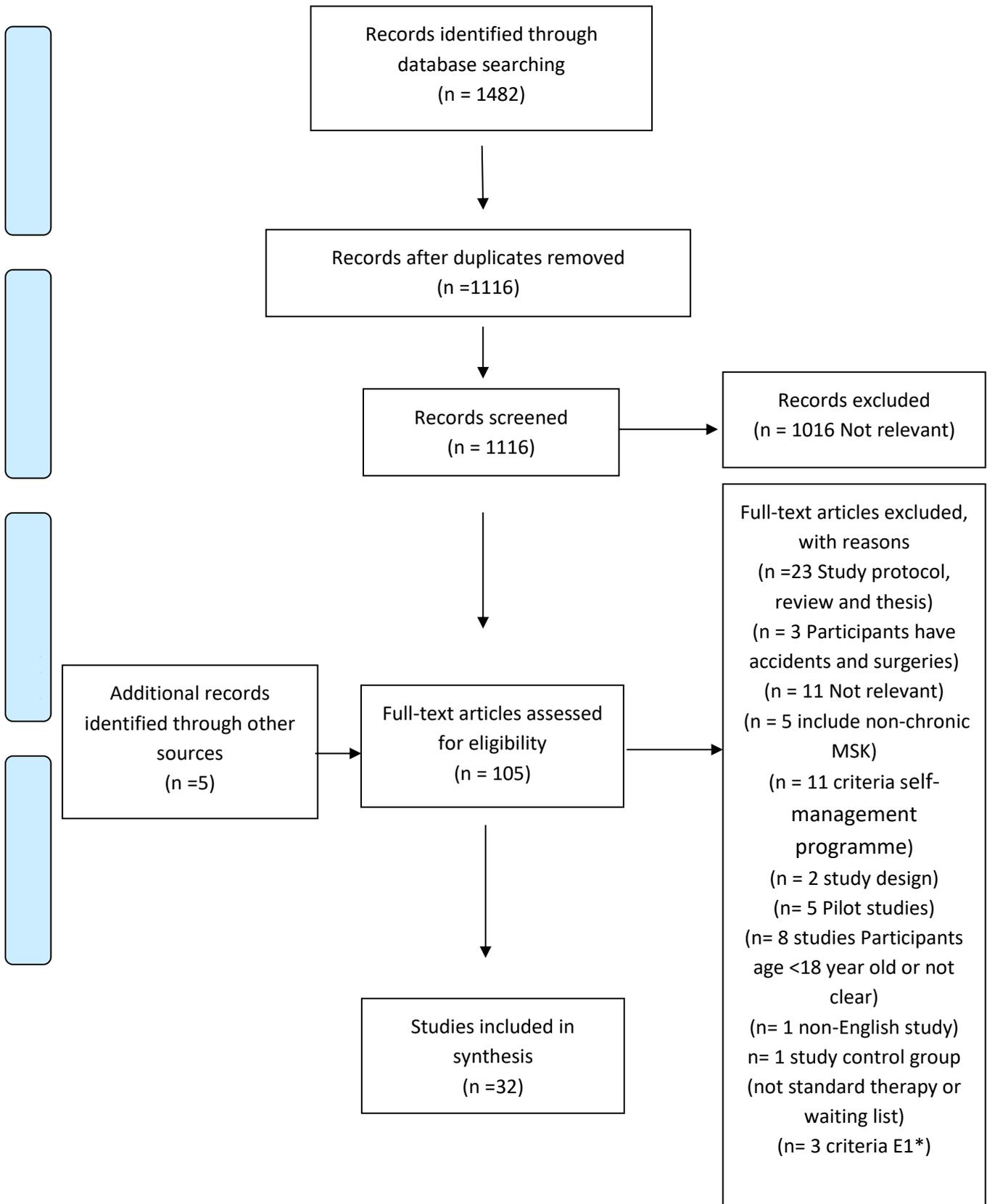
outcome assessment, missing outcome data /dropout and intention-to-treat analysis, selective outcome reporting, and other potential sources of bias. In this review, each of these items was scored with one point, except for the blinding of participants and personnel, which was not included because it is difficult to blind participants with an intervention such as self-management, making the maximum overall score 6. A study was considered to have achieved an acceptable quality level if it had fulfilled five out of six of the assessment items. Agreement between reviewers was evaluated. This was achieved by assessing inter-rater agreement by calculating Cohen's Kappa (Cohen 1960).

2.2.4 Data extraction

Data from each of the included studies were extracted into a Microsoft Excel worksheet as follows: year of publication, title, author, country, sample size, participants, MSK condition, age, self-management programme and control group component, theory/model, programme duration, follow-up, organisation/sitting, delivery method, professional intervention (physiotherapist, multidisciplinary team), and data from baseline to the end of the programme for both the self-management and the control groups for each outcome measure. Pain and function were considered as the primary outcomes. The secondary outcomes were self-efficacy and quality of life. Outcome measures were classified into three periods: short term (3 months or less), medium term (3-6.5 months), and long term (over 6.5 months) (Du et al. 2011).

The identification of extractable data in the review protocol prior to data extraction allowed for process standardisation, leading to the reduction of bias and enhancement of the validity and reliability of the results (Higgins and Deeks 2008).

Figure1: Filtration of the retrieved articles



*E1: Studies in which pain or disability are not the main outcome

Table 3. Studies characteristics

Study	country	Sample size	Participants (CO*, Age, gender)	Self-management	Theory/ model	Delivery method	Programme duration	Follow-up	Control group	Organisation/ sitting	Professional intervention
				Components							
Breedland et al. 2011	Netherlands	34	RA*, 18-66, F*, 70%	PA*, P*, LS*	CBT*	Group	8 W*	22 W	WL*	Medical	MT*
Helminen et al. 2014	Finland	111	OA*, 35-75, F, 69.3%	P, PA	CBT	Group	6 W	12 M*	ST*	Medical	MT
Hamnes et al. 2012	Norway	147	FM*, 20-70, F, 95.9%	PA, P, LS, M*	CBT	Group and individual	1 W	3 W	WL	Medical	MT
Luciano et al. 2011	Spain	216	FM, 18-75, F, 97%	P, M, CO*, PA	E*	Group	2 M	N/A	ST	Medical	MT

Study	country	Sample size	Participants (CO*,Age, gender)	Self-management	Theory/model	Delivery method	Programme duration	Follow-up	Control group	Organisation/sitting	Professional intervention
Martin et al. 2014a	Spain	153	FM, >18, F, 93.47%	P,PA	CBT	Group	6 W	6 M	ST	Medical	MT
Vallejo et al. 2015	Spain	60	FM, >18, F, 100%	PA,P,PE*	CBT	Group or online	10 W	12 M	WL	Medical and internet	MT
Williams et al. 2010	USA	118	FM, >18, F, 95%	CO,P,LS	CBT	Online	Not clear	6 M	ST	online	Not clear
Lera et al. 2009	Spain	83	FM, 28–69, F,100%	PA, P, LS,CO	CBT	Group	15 W	6 M	ST	Medical	MT

Study	country	Sample size	Participant-s (CO*,Age, gender)	Self-management	Theory/model	Delivery method	Programme duration	Follow-up	Control group	Organisation/sitting	Professional intervention
Coleman et al. 2012	Australia	146	OA, >18, F, 74%%	LS, PA,P,CO	SCT*	Group	6 W	6 M	WL,ST	CB*	MT
Carpenter et al. 2012	USA	141	LBP,21 - 74, F, 83%	PA,P, M, PE	MTM,CB T	Online	3 W	6 W	WL	Internet	MT
Luciano et al. 2013	Spain	216	FM,18 - 75, F, 97%	CO,P,PA	Not clear	Group	2 M	12 M	ST	Medical	MT
Manning et al. 2014	UK	108	RA, >18, F, 75.9%	PA,CO,P	SCT	Group	2 W	36 W	ST	Medical	MT
Gustavsson et al. 2010	Sweden	156	NP, 18-65, F, 89%	PA,M,PE	Not clear	Group	7 W	22 W	ST	Medical	PT
Chiauzzi et al. (2010)	USA	199	LBP, 18-79, F, 67%	P, LS,PA	CBT	Online	4 W	6 M	BG*	Online	Not clear

Study	country	Sample size	Participant-s (CO*,Age, gender)	Self-management	Theory/model	Delivery method	Programme duration	Follow-up	Control group	Organisation/sitting	Professional intervention
Dziedzic et al. (2015)	UK	257	OA, >50, F, 66%	PE,PA,P	Not clear	Group	4 W	12 M	BG	Medical	OT*
Jessep et al. (2009)	UK	64	CKP*, >50, F, 68%	PA,P	Not clear	Group	5 W	12 M	ST	Medical, CB	PT
Michaleff et al.(2014)	Australia	172	CW*,18-65,F, 62%	PA,P	CBT	Individual	12 W	12 M	BG , PT	Medical	PT

Study	country	Sample size	Participants (CO*, Age, gender)	Self-management	Theory/ model	Delivery method	Programme duration	Follow-up	Control group	Organisation/ sitting	Professional intervention
Niederma- nn et al.(2012)	Switzer- land	54	RA, Age (Adult),F 81%	PE,LS,PA,P	Not clear	Individual	3 W	12 M	JPE*	Medical	OT
Sharpe and Schrieber (2012)	Australia	104	RA, 18-85, F, 77%	BT group: PA,P (behavior),CO CT group: PA,P(cognitiv e),CO ; CBT group: PA,P (behavior and cognitive),C	CPT	Individual	8 W	6 M	WL	Not clear	Psychologist
Mcknight et al. (2010)	USA	273	OA,35-64, F, 69%	PA,P	ASMP	Group & individual	12 W	24 M	SE	Medical	HCP
Barlow et al. (2009)	UK	125	OA & RH, >18, F, 87%	CO,PA,P,LS	ASMP	Group	6 W	8 years	WL	Not clear	lay leaders

Study	country	Sample size	Participant-s (CO*,Age, gender)	Self-management	Theory/model	Delivery method	Programme duration	Follow-up	Control group	Organisation/sitting	Professional intervention
Ackerman et al. (2012)	Australia	120	OA, >18, F 60%	PA,PE,P	ASMP	Group	6 W	12 M	BG	Medical and CB	HCP and peer leader
Williams et al. (2013)	Australia	247	CD ,45-75, F, 64%	P,PA,LS	SE+*, TTBC*	Group & individual	7 W	4 M	PAP*	Not clear	HCP and a lay leader
Arvidsson et al. (2013)	Sweden	162	RA,21-78, F,72%	P,PA,LS	PBL*	Group	1 year	6 M	ST	Medical	MT
DA Silva et al. (2015b)	Brazil	30	OA, >18, F, 50%	PA,P,LS	Not clear	Group	8 W	8 W	leaflets	Medical	PT
Martin et al. (2014b)	Spain	110	FM, >18, F, 90%	P,CO,PA	CBT	Group	6 W	6 M	ST	Medical	MT

Study	country	Sample size	Participant-s (CO*,Age, gender)	Self-management	Theory/model	Delivery method	Programme duration	Follow-up	Control group	Organisation/sitting	Professional intervention
Martin et al. (2014c)	Spain	110	FM, >18, F, 90%	P, PE, LS,PA	CBT	Group	6 W	6 M	ST	Medical	MT
Irvine et al. (2015)	USA	597	FM, 18 - 65, F, 59%	P,LS,PA	CBT	Online	8 W	4 M	WL	online	MT
Bourgault et al. (2015)	Canada	56	FM, >18, F, 92%	P,PA,LS	PASSA GE Program (include CBT)	Group	11 W	12 M	WL	University sitting	HCP
Gronning et al. (2012)	Norway	141	RA, psoriatic arthritis and unspecified polyarthritis, 18–80, F, 68%	CO,PE,P,PA, LS	Not clear	Group and individual	8 W	4 M	ST	Medical	Nurse
Conn et al. (2013)	USA	104	RA, 20–75, F, 78%	Not clear	ASMP	Group	6 W	18 M	ST	Medical	Not clear

Study	country	Sample size	Participant-s (CO*,Age, gender)	Self-management	Theory/model	Delivery method	Programme duration	Follow-up	Control group	Organisation/sitting	Professional intervention
Magalhaes et al. (2015)	Brazil	66	LBP, 18-65, F, 74%	PA,LS,P	CBT	Individual	8 W	8 W	ST	Medical	PT

RA: Rheumatoid arthritis, **PA:** Physical activity or exercise, **P:** Psychological, **LS:** Lifestyle, **CBT:** Cognitive-behavioural therapy, **WL:** Waiting list, **MT:** Multidisciplinary team, **OA:** Osteoarthritis, **F:** Female, **w:** Week, **M:** Month, **ST:** Standard treatment, **FM:** Fibromyalgia, **M*:** Mind-body therapy, **CO:** condition, **E:** consensus document developed by an expert panel, **PE:** pain education, **SCT:** Social Cognitive Theory, **CB:** community-based, **MTM:** Multiple theoretical models, **LBP:** Low back pain, **BG:** Back pain guideline or advice, **CKP:** chronic knee pain, **CW:** chronic whiplash, **PT:** Physiotherapy, **JPE:** Joint protection education, **OT:** Occupational therapists, **ASMP:** Arthritis Self-Management Program (Stanford); **SE:** Strength training, **HCP:** Health care professional, **CD:** Chronic Disease; **SM+:** Self-efficacy, **TTBC:** Trans-theoretical Behaviour Change Model, **PAP:** Light physical activity program, **PBL:** Problem-based learning

2.2.5 Data synthesis

Narrative analysis was used to synthesise the study findings included in this systematic review. Conduction of meta-analysis was difficult because of data heterogeneity, since highly heterogeneous studies could lead to inaccurate results (Lijmer et al. 2002). The heterogeneity of included studies in the systematic review was obvious in terms of conditions, self-management programmes, outcome measures, programme duration, and the follow-up period.

2.2.6 Results

2.2.6.1 Study search results

The initial search of databases identified 1482 studies, with five further studies found in the manual search. All searches were conducted by the main researcher (AA) following the review protocol. The main investigator (AA) screened the retrieved articles by title and abstract. Any article related to self-management programmes and theoretical models in the musculoskeletal system was selected and included. By the end of this stage, 105 articles were included.

Two independent reviewers assessed the 105 studies for inclusion or exclusion based on prior criteria agreed in the review protocol. A third independent reviewer (SM) was consulted to resolve a disagreement between the researchers. The level of disagreement between the two researchers was assessed by Kappa statistics. A high level of agreement between the first and second researchers was recorded at Kappa 0.83 (Landis and Koch 1977). The final decision on included studies was determined by consensus. The researchers decided to include 32 studies in the current review.

2.2.6.2 Details of included studies

A list of included studies with more details of each study was presented below (see Table 3). Details of the quality assessment for each study are given in Table 4. All studies were conducted in developed countries, except for two which were carried out in Brazil. Seven studies were conducted in Spain, six in the US, five in Australia, four in the UK, two in Sweden, two in Norway, and one study in each of the following countries: Switzerland, Canada, Finland, and the Netherlands.

The studies were varied in multiple dimensions. For example, various outcome measures were used in the studies. Some studies used disease-specific outcomes to assess pain, function, or quality of life. In contrast, other studies used one or more outcome measures to evaluate function, pain, quality of life, or self-efficacy.

2.2.6.3 Demographic information

Participants' demographic information from the included studies was outlined in Table 3. Most of the studies investigated patients suffering from fibromyalgia (FM) (11 studies (34%)), osteoarthritis (OA) (seven (21%)), and rheumatoid arthritis (RA) (seven (21%)). Similar rates have been reported in a previous review that investigated self-management programmes in musculoskeletal conditions, i.e., arthritis (OA and RA) represents the majority of conditions (Du et al. 2011; Carnes et al. 2012). This may be attributed to the existence of a recognised model (Arthritis Self-Management Program) that has been developed in Stanford University (Bodenheimer et al. 2002).

Most of the studies have a sample size of more than 100 participants. The majority of participants were women (around 78%). This figure is similar to that found in a

previous systematic review (Carnes et al. 2012), where female participants represented 72%. Moreover, the range of participants' ages varied between studies; for example, some studies restricted the age of participants to between 18 and 75, and others included all adults above 18 years.

2.2.6.4 Characteristics and effectiveness of self-management programme in MSK

Cognitive behaviour therapy (CBT) was frequently used as a theory/model to design self-management programmes in the studies in the current review (see Table 3).

CBT emphasises the importance of understanding patients' beliefs and behaviours .Moreover, therapists use multiple cognitive techniques to help patients change or modify their way of thinking and beliefs to successfully achieve particular behavioural and emotional changes (Hofmann and Asmundson 2017).Beck (2011, p7-10) described the main principle of cognitive behavioural therapy as “(1) Cognitive behavior therapy is based on an ever-evolving formulation of patients' problems and an individual conceptualization of each patient in cognitive terms;(2) Cognitive behavior therapy requires a sound therapeutic alliance;(3) Cognitive behavior therapy emphasizes collaboration and active participation;(4) Cognitive behavior therapy is goal oriented and problem focused;(5) Cognitive behavior therapy initially emphasizes the present;(6) Cognitive behavior therapy is educative, aims to teach the patient to be her own therapist, and emphasizes relapse prevention;(7) Cognitive behaviour therapy aims to be time limited;(8) Cognitive behavior therapy sessions are structured;(9) Cognitive behavior therapy teaches patients to identify, evaluate, and respond to their dysfunctional thoughts and beliefs; and (10) Cognitive behavior therapy uses a variety of techniques to change thinking, mood, and behavior. ”

The majority of those using CBT were either designed or delivered by a multidisciplinary team. However, the number of sessions varied, and programme lengths ranged from one to 15 weeks. Moreover, the delivery method (group, individual, or online) was not consistent across all studies. This is to be expected, given the lack of standard CBT therapy protocols (Ehde et al. 2014).

Several guidelines recommended using CBT as a compound rehabilitation programme for CLBP conditions (Airaksinen et al. 2006; NICE 2009). Moreover, the previous review reported that self-management programmes that contained psychological components showed benefits in several outcome measures, such as pain and disability (Carnes et al. 2012). However, in the current review, few high-quality studies that adopted a psychological component like CBT reported a significant difference in terms of pain and disability (5/32).

The effectiveness of self-management programmes was evaluated based on high-quality studies. Only those studies that achieved five out of six points in quality criteria were included in the synthesis (see Table 4); this amounted to 14 studies, of which 4 achieved 6 points out of 6. Evidence regarding the effectiveness of self-management programmes seems to be inconsistent between studies (see Table 5). Almost half of the studies reported significant improvements ($P < 0.05$) for at least one of the following outcomes: functions, pain, quality of life, and self-efficacy.

It appears that researchers have not used specific self-management outcome measures to assess the effectiveness of self-management programmes. Thus, may because of the absence of valid and reliable outcome measure as systematic review reported lack of self-management outcome measure that particular develop for stroke patients (Boger et al. 2013). Different studies in the current review used

multiple outcome measures to assess some aspects of self-management, such as promoting physical activity, pain, quality of life and self-efficacy. However, the use of traditional outcome measures to assess self-management without considering its natural and theoretical underpinnings may mean that the effectiveness of the self-management programme is not accurately reported. Self-management is a complex intervention and includes multidimensional elements, as described in previous sections. It has been defined as “The individual's ability to manage the symptoms, treatment, physical and psychosocial consequences and lifestyle changes inherent in living with a long term disorder.” (Department of Health 2006, p6). Moreover, Wilkinson and Whitehead (2009, p.1,145) developed a more comprehensive view of self-management as being an “individual’s ability, in conjunction with family, community and the appropriate health care professionals, to successfully manage the symptoms, treatment, physical, psychosocial, cultural and spiritual consequences and inherent lifestyle changes required for living with a long-term chronic disease”. Therefore, it is necessary to consider key aspects of self-management to assess the effectiveness of particular programmes, such as patient problem-solving skills, psychological, environmental (healthcare system, relationship with healthcare professional), social and family support.

The existing literature shows that various approaches/methods have been used to measure the effectiveness of self-management, such as adopting positive behaviour (Lorig et al.1999; Lorig and Holman 2003). Moreover, measurement of the attitude towards changing a particular behaviour has been considered (Albarracin et al. 2005; Hirsche et al. 2011). It is obvious that the studies examined in the current review failed to consider most behaviour or cognitive outcomes, with the exception of the use of self-efficacy. In addition, few studies assessed self-efficacy compared with

physical or pain outcome measures. This may thus lead to a limited assessment of physical and pain-oriented self-management, rather than the adoption of a biopsychosocial view that considers multidimensional aspects of self-management.

2.2.6.5 Effectiveness in improving physical activity

Functions and physical activities were the most frequent outcomes used in the included studies. However, some articles used disease-specific outcomes or quality-of-life outcome measures that included function or physical activities components to evaluate function. This makes pooling data and comparing research findings difficult, which may negatively affect the accuracy of assessing the effectiveness of self-management on function and physical activities. It seems that using various outcome measures is considered one of the obstacles that challenge researchers in conducting meta-analysis in systematic reviews that assesses the effectiveness of self-management in general (Jones et al. 2015).

Thirteen articles reported significant improvement in participants' function or physical activity ($P < 0.05$). Only seven out of 13 studies considered high quality to have been achieved in five or more based on the quality criteria used in this review (see Table 5). Out of seven high-quality studies, only three studies followed up with participants for more than six months (Williams et al. 2010; Coleman et al. 2012; Manning et al. 2014). Three articles evaluated function for the medium term (3–6.5 months) and another study followed participants for the short term (less than 3 months). It seems that self-management programmes have a positive effect on participants' physical ability in the short and long term.

However, the length of self-management programmes showed no clear effect on participants' function. For example, some studies allocated two-week self-

management programmes, while others of six and eight weeks all had similar positive findings (Breedland et al. 2011; Coleman et al. 2012; Manning et al. 2014). A previous review reported that a longer self-management programme did not produce a more positive outcome (Carnes et al. 2012). This raises questions in terms of the applicability of delivering an effective and efficient self-management programme that considers restricted time available in daily clinical practice.

The most common factor between these six studies was that the method of self-management programme delivery was in groups (5/6). This may be understandable, especially with existing evidence that a group self-management programme was more effective than an individual one (Carnes et al. 2012). However, using a group self-management programme is not necessarily only related to effectiveness, but factors such as cost and time (resources) may influence health care professionals' and researchers' decisions.

Moreover, most of those studies (4/6) stated the theory (model) that had been adopted to design the self-management programmes. This finding differs from the previous review, which reported that many studies do not state clearly the theoretical model on which the self-management programme has been developed (Richardson et al. 2014).

However, the effectiveness of self-management on physical activities in this review tends to be contradictory. Around half of the studies that assessed the effectiveness of self-management on physical activities in this review did not report any significant improvement ($P < 0.05$) in physical activity among MSK patients (see Table 5). Six of these articles were considered high-quality studies (Jessep et al. 2009; Ackerman et

al. 2012; Helminen et al. 2014; Dziedzic et al. 2015; Michaleff et al. 2014; Magalhaes et al. 2015).

2.2.6.6 Effectiveness in reducing pain

Pain was the most repeated outcome used in studies. Thirteen studies reported positive improvement of a self-management programme in pain ($P < 0.05$). However, only six achieved an acceptable level of quality criteria. Half of these six studies evaluated pain for 6 months or longer (Williams et al. 2010; Coleman et al. 2012; Manning et al. 2014). Two studies followed participants for the medium term (Gustavsson et al. 2010; Gronning et al. 2012). One study evaluated pain for the short term (Da Silva et al. 2015b). This finding is similar to the physical activity outcome. However, no high-quality studies reported positive significant improvement in both physical and pain outcomes for 12 months or more. This is different from a previous review finding that reported medium improvement in terms of physical activities and pain among arthritis patients after 12 months of discharge from a self-management programme (Du et al. 2011).

The effect of self-management on pain seems to be contradictory between studies. Nine studies found no significant reduction in pain ($P < 0.05$) among MSK patients (see Table 5). Six high-quality studies reported no significant reduction in pain (Jessep et al. 2009; Ackerman et al. 2012; Helminen et al. 2014; Michaleff et al. 2014; Dziedzic et al. 2015; Magalhaes et al. 2015). The majority of these studies followed participants for 12 months. The common factor between most of these studies was that they were delivered by an individual health care professional (not a multi-disciplinary team).

2.2.6.7 Effectiveness in improving quality of life

Using a quality of life measurement was common in the studies. Nine studies reported improvement in quality of life ($P < 0.05$) after a self-management programme (see Table 5). However, only three studies achieved high quality (Coleman et al. 2012; Gronning et al. 2012; Da Silva et al. 2015b).

These three high-quality studies followed participants for varied periods. For example, long-term assessment (6 months) was conducted in one study (Coleman et al. 2012). Moreover, medium- and short-term evaluation was implemented in two studies retrospectively (Gronning et al. 2012; DA Silva et al. 2015b). It is clear that the numbers of high-quality studies that report positive change in quality of life are fewer than those that report on pain and function. This could be due to the fact that quality of life has multiple dimensions (physical and mental), because of which is difficult to gain an overall improvement in all aspects of patients' quality of life.

The majority of the studies did not report significant improvement in the quality of life outcome. Of the 12 that did, only five achieved an acceptable quality level. It appears that self-management has a limited effect on patients' quality of life in the current review. However, it is difficult to determine the influence of self-management on patients with a chronic condition in terms of quality of life because it is complex and multi-dimensional.

2.2.6.8 Effectiveness in improving self-efficacy

Self-efficacy was an outcome measure less used in included studies in the current review than physical, pain, and quality of life measures. This was unexpected, especially as many self-management theories are based on enhancing patients' self-

efficacy (Bandura 1997; Bodenheimer et al 2002). Thus, it could be more rational to use self-efficacy as the primary outcome.

Eight studies have shown an increase in participants' self-efficacy outcome (see Table 5). Five of the eight studies are considered high quality (Gustavsson et al. 2010; Gronning et al. 2012; Helminen et al. 2014; Manning et al. 2014; Dziedzic et al. 2015).

A self-management programme has significant long-term improvement in self-efficacy among MSK patients (Helminen et al. 2014; Manning et al. 2014; Dziedzic et al. 2015). Moreover, a similar finding was reported in studies for the medium period (< 3 months) (Gustavsson et al. 2010; Gronning et al. 2012). However, five studies did not report a significant change in participants' self-efficacy (see Table 5). Only two of these studies were considered high quality (Breedland et al. 2011, Williams et al. 2013).

It seems that self-management programmes have a positive effect on self-efficacy in the long- and medium-term. However, no studies reported significant improvement in participants' self-efficacy in the short term.

Table 4. Studies quality assessment

Study	Randomisation	Allocation concealment	Blinding	Intention-to-treat analysis	Selective outcome reporting	Bias	Overall quality
Breedland et al. (2011)	1	1	1	1	0	1	5
Helminen et al. (2014)	1	1	1	1	1	1	6
Hannes et al. (2012)	1	0	1	0	1	1	4
Luciano et al. (2011)	1	0	1	1	0	1	4
Martin et al. (2014a)	1	0	0	0	1	1	3
Vallejo et al. (2015)	1	0	1	1	0	1	4
Williams et al. (2010)	1	0	1	1	1	1	5
Lera et al. (2009)	1	0	1	1	0	0	3
Coleman et al. (2012)	1	1	1	1	1	1	6
Carpenter et al. (2012)	1	0	1	0	1	0	3
Luciano et al. (2013)	1	0	1	1	0	1	4

Study	Randomisation	Allocation concealment	Blinding	Intention-to-treat analysis	Selective outcome reporting	Bias	Overall quality
Manning et al. (2014)	1	0	1	1	1	1	5
Gustavsson et al. (2010)	1	1	1	1	1	1	6
Chiauzzi et al. (2010)	0	0	1	0	1	0	2
Dziedzic et al. (2015)	1	0	1	1	1	1	5
Jessep et al. (2009)	1	0	1	1	1	1	5
Michaleff et al. (2014)	1	1	1	1	1	1	6
Niedermann et al. (2012)	0	1	1	1	1	0	4
Sharpe and Schrieber (2012)	1	0	1	1	0	1	4
Mcknight et al. (2010)	1	0	0	1	0	1	3
Barlow et al. (2009)	1	0	1	0	1	1	4
Ackerman et al. (2012)	1	1	1	1	1	0	5

Study	Randomisation	Allocation concealment	Blinding	Intention-to-treat analysis	Selective outcome reporting	Bias	Overall quality
Williams et al. (2013)	1	0	1	1	1	1	5
Arvidsson et al. (2013)	1	1	0	0	0	1	3
DA Silva et al. (2015b)	1	1	1	0	1	1	5
Martin et al. (2014b)	1	0	1	0	1	1	4
Martin et al. (2014c)	0	0	1	0	0	1	2
Irvine et al. (2015)	0	0	1	1	0	1	3
Bourgault et al. (2015)	1	0	1	0	1	1	4
Gronning et al. (2012)	1	1	0	1	1	1	5
Conn et al. (2013)	0	0	0	1	0	1	2
Magalhaes et al. (2015)	1	1	1	0	1	1	5

Table 5. Effectiveness of self-management programmes in term of function, pain, quality of life and self-efficacy.

Finding	Significant effect* All Studies	No significant effect. All Studies
Function	Breedland et al. (2011), Luciano et al. (2011), Williams et al. (2010), Coleman et al. (2012), Carpenter et al. (2012), Luciano et al. (2013), Manning et al. (2014), Gustavsson et al. (2010), Barlow et al. (2009), Silva et al. (2015), Martin et al. (2014c), Irvine et al. (2015), Williams et al. (2013).	Helminen et al. (2014), Dziedzic et al. (2015), Jessep et al. (2009), Michaleff et al.(2014), Ackerman et al. (2012), Magalhaes et al. (2015),Lera et al. 2009, Chiauzzi et al. (2010), Niedermann et al.(2012), Mcknight et al. (2010), Arvidsson et al. (2013), Conn et al. (2013), Sharpe and Schrieber (2012)
Pain	Luciano et al. (2011), Martin et al. (2014a), Williams et al. (2010), Coleman et al. (2012), Luciano et al. (2013), Manning et al. (2014), Gustavsson et al. (2010), Chiauzzi et al. (2010), Silva et al. (2015), Martin et al. (2014b), Martin et al. (2014c), Irvine et al. (2015), Gronning et al. (2012),	Carpenter et al. (2012), Mcknight et al. (2010), Arvidsson et al. (2013), Helminen et al. (2014); Dziedzic et al. (2015); Jessep et al. (2009); Michaleff et al. (2014); Ackerman et al. (2012); Magalhaes et al. (2015)
Quality of life	Martin et al. (2014a), Vallejo et al. (2015) (post-treatment-CBT for and 12 month-iCBT), Coleman et al. (2012), Silva et al. (2015), Martin et al. (2014b), Irvine et al. (2015), Gronning et al. (2012), Niedermann et al.(2012), Martin et al. (2014c)	Hamnes et al. (2012), Luciano et al. (2011), Lera et al. (2009), Arvidsson et al. (2013), Bourgault et al. (2015), Conn et al. (2013), Magalhaes et al. (2015), Helminen et al. (2014), Dziedzic et al. (2015), Jessep et al. (2009), Michaleff et al.(2014), Ackerman et al. (2012),

Finding	Significant effect* All Studies	No significant effect. All Studies
Self-efficacy	Pain Helminen et al. (2014), Vallejo et al. (2015) (12 month-iCBT), Carpenter et al. (2012), Manning et al. (2014), Gustavsson et al. (2010), Gronning et al. (2012), Irvine et al. (2015), Dziedzic et al. (2015)-Pain	Hamnes et al. (2012), Chiauzzi et al. (2010), Barlow et al. (2009), Breedland et al. (2011), Williams et al. (2013),

* Significant improvement = $P < 0.05$

2.2.6.9 Delivery method

The majority of the studies (19/32) conducted a self-management programme in groups (see Table 3). Around half of these studies are considered high-quality studies. Moreover, individual self-management programmes have been reported in four studies, and only two of these are considered high-quality studies. Similar findings were stated in self-management studies that used both group and individual methods. It appears that the number of online or remote self-management programmes is similar to that reported in the last review (Carnes et al. 2012). Five studies evaluated the effectiveness of online self-management programmes, but only one of these was considered high quality (Williams et al. 2010). The ability to evaluate the effectiveness of online self-management programmes in MSK patients is limited owing to the lack of high-quality evidence.

2.2.6.10 Professional intervention and setting

Multi-disciplinary teams were the dominant method to design or deliver self-management programme (15/32) studies (see Table 3). The second most common leaders of self-management were physiotherapists (Jessep et al. 2009; Gustavsson

et al. 2010;; DA Silva et al. 2015b; Magalhaes et al. 2015; Michaleff et al.2014). The least common developers or leaders of self-management were occupational therapists, psychologists, or nurses (Gronning et al. 2012; Niedermann et al. 2012; Sharpe et al. 2012; Dziedzic et al. 2015).

The main setting in which self-management programmes were conducted was a medical organisation (20/32). Surprisingly, self-management programmes in a community-level setting comprised only three studies, and two of these were conducted in both medical organisations and the community (Jessep et al. 2009; Ackerman et al. 2012; Coleman et al. 2012).

2.2.7 Quality assessment

Almost half of the studies (43%) achieved an acceptable level of quality (see Table 4). The second independent reviewer has reviewed 12 studies (37%). The inter-rater agreement between the researchers was Kappa, 0.72. This is considered an acceptable level of agreement (Landis and Koch 1977).

2.2.8 Discussion

It was obvious that studies in the current review were varied in multiple elements; for example, the studies investigated varied conditions such as FM, OA, RA, chronic low back pain, and chronic neck pain. Moreover, studies were conducted in different countries (see Table 3). This means that these countries usually have varied health care models that suit their needs and resources, which may explain the use of different self-management programmes among these studies. Newman et al. (2004) believed that the goals and objectives of self-management might differ based on conditions. However, the ultimate goal of self-management seems to be similar, i.e.,

mainly emphasising helping and empowering patients to be independent and responsible for themselves (Lorig and Holman 2003).

The self-management programme can be categorised into two main types: generic and disease-specific approaches. The common generic approach is cognitive behavioural therapy and a chronic disease self-management program. Using a self-management generic approach seems to be sensible because self-management programmes share a main goal, i.e., developing skills, including goal setting and problem solving (Newman et al. 2004). However, using disease-specific self-management may be better in terms of developing and tailoring a programme based on specific conditions and individual needs.

In arthritis research, it has been reported that the effectiveness of disease-specific self-management programmes is better compared with a generic approach for the short term (four months). Multiple outcome measures were used in this study, such as quality of life (including pain and disability), health behaviours, self-efficacy, and other outcomes (Lorig et al. 2005). However, for the long term both approaches (disease-specific and generic) reported a similar positive effect. It seems that the effectiveness of the disease-specific approach compared to the generic approach is unclear, and it differs between the studies and conditions. Ghahari et al. (2015) examined the effectiveness of a generic self-management programme among diabetic patients compared with a disease-specific one. Both approaches showed positive results but the generic approach had superior results in the self-efficacy outcome.

Self-management programmes were held in medical settings in the majority of studies in this review. However, self-management programmes are generally

expected to be conducted in a community setting, as the main aim of self-management is to empower patients to be independent and responsible for themselves (Lorig and Holman 2003). In this light, conducting approaches like self-management in a primary care setting may increase the amount of interaction between patients and health care providers, which may lead patients becoming more dependent on these providers. However, the studies may have been conducted in a medical setting for practical reasons, such as study design, including randomised control trials (RCT), health care professionals' availability, and costs.

In terms of delivering self-management, various methods have been reported. The most common self-management delivery method was face-to-face; however, the online delivery method of self-management was also used. It seems that considering remote self-management programmes such as an online website could be an efficient alternative. However, it is difficult to assess the success of online self-management programmes in the current review because only one study achieved the acceptable level of quality (Williams et al. 2010).

The majority of the self-management programmes were conducted in group sessions. This may be because a group environment can enhance patients' confidence and engagement with society (Carnes et al. 2012). Individual self-management was implemented in some studies in the current review. Individually designed sessions seem to have been used in patient education in the previous review, and these were shown to be somewhat effective (Engers et al. 2008). The choice of delivery model may be influenced by culture, the economic situation, and the health care system (e.g., the biomedical or biopsychosocial model).

In the current review, 14 studies (43%) were considered high-quality studies. Many studies included in the previous review that evaluate self-management in MSK and acquired brain injury reported high risk of bias in various parameters (Carnes et al. 2012; Jones et al. 2015). To minimise the influence of bias on the review outcome, only high-quality studies were included in data analysis in the current review.

The main limitation in the current review in terms of design and quality is that an independent reviewer did not conduct a full independent systematic search. Moreover, the independent reviewer assessed the quality of only 43% of studies in the current review because of time restrictions. However, a high level of agreement between both reviewers was reported for both studies' selection and quality assessment (Kappa is 0.83 and 0.72, respectively). A similar method of quality assessment was adopted in other systematic reviews (Hoy et al. 2012).

Another limitation is that this review did not conduct meta-analysis. However, it has been documented in the study protocol that conducting meta-analysis would depend on the data heterogeneity level, which may minimise the possibility of bias. Conducting meta-analysis seems unsuitable with heterogeneity among the conditions, self-management component, and outcome (Newman et al. 2004).

It is clear that drawing a conclusion regarding the effectiveness of self-management among MSK patients will be limited in the current review for various reasons, such as using different methods and outcomes between studies. This is because this review is part of a PhD research project that aims at exploring self-management of CLBP. Thus, it is equally important to establish and build a strong understanding of concepts and characteristics of self-management alongside effectiveness.

Three articles investigated the effectiveness of self-management of CLBP in this review. The result was contradictory between studies. Two studies reported a positive improvement in a minimum of one of the following outcomes: physical activity, pain, and self-efficacy (Carpenter et al. 2012; Chiauzzi et al. 2010). However, all studies that reported positive findings were considered low-quality studies. Magalhaes et al. (2015) reported no significant effect of self-management among CLBP patients in physical activity, pain, and quality of life. These studies achieved acceptable levels of quality that may explain why all studies reporting significant improvement were low-quality studies, which usually include high risk of bias. A recent systematic review that investigated the effectiveness of self-management among CLBP patients presented adequate evidence showing limited effect of self-management on CLBP (Oliveira et al. 2012).

It is difficult to reach a conclusion in this review regarding the effectiveness of self-management in CLBP, with only three studies having investigated CLBP and one study having achieved an acceptable level of quality.

The effectiveness of self-management varied between studies. The effect of self-management among MSK patients in this review seems to be inadequate in high-quality studies in terms of physical activity and pain outcomes for the long term (12 months). This result differs from the previous review that reported positive results in terms of disability and pain outcome (Du et al. 2011). This may be because the current review includes only high-quality studies.

The influence of a self-management programme in terms of quality of life tends to be limited. This may be because of the complex nature of quality of life, which includes multiple components. However, self-efficacy shows significant improvement in the

majority of the high-quality studies. This seems reasonable, especially as one of the main objectives of self-management is to enhance patients' self-efficacy (Bodenheimer et al. 2002).

In conclusion, the evidence for the effectiveness of self-management programmes for chronic MSK seems inconclusive. This may be attributed to the difficulty of conducting meta-synthesis because of the heterogeneity of conditions and outcomes. Nonetheless, positive results have been reported in physical activity, pain, quality of life, and self-efficacy outcomes. The adoption of self-management programmes among health care providers may grow for various reasons, such as lower costs and higher demand for health care services among chronic MSK patients. Thus, the main components of self-management and the main outcome measures to evaluate the effectiveness of self-management need to be determined and tested by a multi-disciplinary panel of experts before conducting any further RCT studies. That will help researchers in the future to assess the effectiveness of self-management more accurately by conducting meta-analysis. Moreover, qualitative studies that explore both health care providers' and patients' perspectives regarding self-management in various countries and settings could enhance the understanding and acceptance of self-management approaches.

2.3 Meta-synthesis: Patients-health care providers' partnership

A recent meta-synthesis explored the impact of patient–practitioner partnership on patients' ability to self-manage CLBP (Fu et al. 2016). This review included ten studies that represented both patients' and health professionals' perceptions. However, only one of these ten explored health professionals' perceptions of CLBP patients' management (Jeffrey and Foster 2012). Given this previous research,

conducting a new systematic review and meta-synthesis is unjustified, and finding new studies that might change the synthesis's conclusions seems difficult.

A Critical Appraisal Skills Programme (CASP) checklist was used in this review (Fu et al. 2016), by two independent reviewers to assess the quality of the included studies (CASP 2013). The CASP is a common method of evaluating the quality of qualitative research. However, some researchers prefer not to assess quality based on scored checklist criteria (Sim and Madden 2008; Snelgrove and Lioffi 2013). This variability may reflect the theoretical and methodological differences between qualitative and quantitative paradigms.

This review introduces several themes as factors that may influence the CLBP patient–practitioner partnership in terms of self-management (see Table 6). The most common theme was communication. The patients emphasised the importance of communication and discussed various channels they used to communicate with their health care providers, including in person, in print and by telephone (Cooper et al. 2008, 2009). However, the patients seemed to prefer in-person communication. Verbal and non-verbal communication may be so important because it gives patients the feeling that they are not only a part of the process, but at the centre of care.

Understanding was also highlighted in all studies by both patients and health care professionals. It seems that patients and practitioners don't have the same expectations regarding their roles in CLBP management. Patients want practitioners to understand their pain, provide diagnoses and teach self-management. In contrast, practitioners expect patients to have realistic expectations regarding CLBP management. This conflict in views may have a negative impact on the establishment of a partnership that could enhance patients' self-management skills.

Themes such as the role of the practitioner, information delivery and patient involvement have also been frequently reported by both patients and physiotherapists (May 2001, 2007; Cooper et al. 2008; Jeffrey and Foster 2012). Issues related to the patient–professional relationship were often acknowledged by patients. From the patients’ perspective, this includes physiotherapists’ professionalism. Moreover, patients valued the information that is provided to them through their therapists, even if it did not have a positive effect on their progress (May 2001). This may be because patients felt more empowered and thus better able to manage alone.

In conclusion, effective communication between patients and practitioners is the key to establishing a partnership that could influence the adoption of self-management (Fu et al. 2016). The implementation of self-management requires a collaborative effort between patients and practitioners. Practitioners need to adopt a more holistic approach that guarantees that the patients will be the centre of care and provide patients with enough self-management support. Patients seem to accept they should be actively involved in their health management. However, the fact that nearly all of the studies included in the review were conducted in developed countries may limit the transferability of these findings to developing countries for various reasons, including culture, the health care system structure and resource availability.

Table 6. Patients-practitioner partnership themes.

Themes	Effective communication
	Mutual understanding
	Roles of health professionals
	Information delivery
	Patient involvement
	Individualised care

Based on data from (Fu et al. 2016)

3. Chapter Three: Methodology

3.1 Overview

This chapter presents a critical review of research paradigms to illustrate the process of selecting the research methodology for the current research project. This could help to develop an understanding of research paradigms and to identify the most suitable of these to serve as a framework and guide to answering research questions. The specific methods for each part of the study are discussed in detail in chapters Four, Five and Six.

3.2. Research philosophy

A research paradigm is "the philosophical stance taken by the researcher that provides a basic set of beliefs that guides action" (Creswell 2007, p248). Understanding these concepts is essential in each research project because adopting certain views may influence researchers' selection of the appropriate methodology and method to address the research question. Denzin and Lincoln (1994, p13) describe a paradigm as a "net that contains the researcher's epistemological, ontological, and methodological premises".

According to Neuman (2014, p94-95), ontology can be defined as "[a]n area of philosophy that deals with the nature of being or what exists... [and] asks what really is and what the fundamental categories of reality are"; epistemology is defined as "[a]n area of philosophy that [is] concerned with the creation of knowledge; [it] focuses on how we know what we know". Understanding those two concepts is essential for selecting the most appropriate research paradigm to guide the study's methodology and methods and ultimately answer the research questions.

Traditionally, the two most common paradigms used in research have been the positivist paradigm and the interpretivist paradigm. The positivist approach claims that one's sense of reality exists independently and can be measured objectively (Nelson et al. 2014). Usually, positivism is associated with quantitative natural science research, and it uses numerical data to present a cause-and-effect relationship. In contrast, interpretivism considers reality to be a constructed process created through the interaction between the researcher and participants; thus, the researcher interprets the participants' experience and perceptions and arrives at a subjective meaning (Creswell 2003). The interpretivist paradigm has frequently been used in qualitative social science research, and data are presented in a narrative style.

The quantitative and qualitative approaches clearly have contradictory perspectives in terms of ontology and epistemology. This has led to the emergence of two types of researchers – purists and pragmatists – in terms of their views on applicability of combining quantitative and qualitative methods (Tashakkori and Teddlie 1998). Purists do not agree with combining the two approaches due to the crucial differences between them (Mcevoy and Richards 2006). In contrast, pragmatists tend to use the methods they find appropriate for helping them to answer their research questions comprehensively, even if doing so requires triangulation of methods. They consider that combining quantitative and qualitative methods enables the approaches to complement one another.

Pragmatism is a paradigm that provides an alternative understanding of , compared with the traditional interpretivist and positivist paradigms. It is important to understand that pragmatism has introduced a practical aspect as a new concept in research philosophy, which helps to develop a research paradigm that is justified in

using mixed methods based on the optimal methods to answer the research questions (Yvonne Feilzer 2010). In the literature, there has long been discussion and debate regarding the validity of using methods that belong to different research paradigms, as offered by pragmatism (Glogowska 2011). However, it has now become more acceptable to use mixed methods to answers research questions in a variety of fields, such as health and social care (Morgan 2007; Ostlund et al. 2011). This could be due to the fact that the use of real-world questions is complicated in research, and use of the best method available, irrespective of which traditional paradigm it follows, is required to comprehensively answer these questions.

3.3 Discussion and rationale for the choice of approach

Mixed methods is defined as "... the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration" (Johnson et al. 2007, p123). Thus, pragmatism will allow the researcher to combine qualitative and quantitative methods and provide a rational clarification for triangulation from a philosophical perspective. This will enhance the credibility of the study findings by ensuring that the researcher follows a well-defined framework that guides the stages of the research process in terms of selecting an appropriate research design and applicable data collection and analysis methods (Wahyuni 2012).

3.3.1 Mixed methods

It is important to understand that "researchers start a project with certain assumptions about how they will learn and what they will learn during their inquiry", regardless of the adopted paradigm (Creswell 2003, p6). Such assumptions can be based on philosophical suppositions (epistemologies and ontologies), as discussed in previous sections (Crotty 1998). In contrast, practical research methodologies could be described as pragmatic approaches based on the view that "people apply knowledge in their daily lives; the value of knowledge is the ability to be integrated with a person's practical everyday understanding and choices"(Neuman 2014, p109). Mixed-methods approaches stem from the pragmatic viewpoint, which considers answering research questions as the main priority of research; from this perspective, any method required to achieve this goal is appropriate, regardless of philosophical assumptions (Tashakkori and Teddlie 1998; Feilzer 2010). Thus, mixed methods provide researchers with strategies to use to gain a comprehensive understanding of complex phenomena (Curry et al. 2013). In the past decade, more studies than before have adopted mixed-methods approaches in healthcare and social science research (Collins et al. 2007).

The main concern related to using mixed-methods research is that the quantitative and qualitative approaches stem from different paradigms, and research methods have epistemological commitments (Bryman 2015). This issue may lead some researchers to conclude that it is not possible to use mixed methods. Others may think that since quantitative and qualitative approaches represent separate paradigms, the two cannot be integrated. Some researchers have argued that from an epistemological point of view, each paradigm is associated with unique assumptions, methodologies and methods (Guba and Lincoln 1994; Creswell 2003).

Thus, surveys and interviews cannot realistically be combined in a single research project because of the difference in paradigms; as a result, only limited integration may occur (Bryman 2015).

Understanding complex phenomena in social and healthcare research requires the use of multiple methods to overcome the limitations of each method. For example, qualitative methods adopting an inductive approach provide a more in-depth understanding of certain phenomena (Robson 2002; Ritchie et al. 2014). The drawback of qualitative methods is that they are conducted with a small sample, since achieving generalisability is not a goal; rather, the main objective is to provide a deep understanding or develop theory (Silverman 2013). Quantitative methods adopt a deductive approach to test hypotheses and enable the researcher to investigate problems in the wider population using tools like cross-sectional surveys and cohort studies (Robson 2002; Creswell 2009). Usually, random sampling is used to enhance the generalisability of research findings in quantitative research (Marshall 1996; Onwuegbuzie and Collins 2007). However, quantitative methods do not provide the deep understanding of complex psychosocial and social issues that qualitative methods can provide (Marshall 1996; Creswell et al. 2006). Thus, mixed methods represent a reasonable alternative approach to use for exploring complex phenomena from a practical point of view to answer the research questions comprehensively.

In the present research study, the researcher uses pragmatism as the philosophical methodology, since the study not only aims to develop a deep understanding of people's experiences or to test and generalise a theory but also to explore and develop a deep understanding of self-management in CLBP physiotherapy management within a Saudi context.

The researcher used mixed-methods triangulation because this provides completeness in the data, thereby enhancing the reliability of the research findings (Williamson 2005). Moreover, mixed methods enable researchers to investigate particular phenomena and compare results obtained through different methods, improving the credibility of the research results (Bryman 2015). It is essential to consider the order in which the research methods will be used at an early stage before writing the research proposal and to choose the best strategy to help answer the research questions and capture the nature of research, such as by determining whether exploratory or explanatory research will be employed (Ritchie et al. 2014).

This research project adopts a sequential design (Creswell 2011). The first section involves a quantitative study, while the second section comprises two qualitative studies. This order of triangulations used due to the lack of available information about physiotherapeutic management of CLBP in the KSA. Thus, the quantitative method allows explorations of current physiotherapy practices for CLBP management using a large population. This has helped the researcher to explore common current physiotherapy management for CLBP and identify physiotherapists' levels of familiarity with self-management concepts and their elements to inform the qualitative studies in the next stage, in which a topic guide is developed. The qualitative method provides a more in-depth understanding of certain phenomena by focussing on personal experiences (Robson 2002; Ritchie et al. 2014). This has help to provide better insight into patients' and physiotherapists' perceptions and understandings of self-management.

3.3.1.1 The quantitative section

3.2.1.1.1 The study design

The main aim of this stage of research project was to explore current physiotherapy management for CLBP in the KSA. A cross-sectional design and self-reported questionnaires were utilised to address the research objectives, seeking to explore current physiotherapy management for CLBP and identify physiotherapists' levels of familiarity with self-management concepts in the KSA. The use of a cross-sectional design is justified because the main purpose of this section is to provide specific information, such as physiotherapists' commonly used assessment and treatment methods for CLBP, physiotherapists' characteristics, the extent of use of self-management and the availability of guidelines or local protocols for CLBP in specific organisations. The purpose of this section is not to test hypotheses but rather to engage in exploration, and the nature of data is descriptive; thus, use of a cross-sectional design is a reasonable choice (Levin 2006). Alternative methods, such as a cohort design, are not appropriate because the current research's primary aim is to explore common management approaches rather than observing physiotherapists' behaviour (causal relationships) in using common approaches, which would require multiple points of contact in an observational study (Mann 2003).

3.2.1.1.2 Sampling

The feasibility of the study was assessed in the initial stage of the research design. For example, the availability of lists of all registered physiotherapists in the KSA was investigated by contacting the Ministry of Health and the Saudi Commission for Health Specialties, but no information was provided by either office. It may be that accurate records of physiotherapists working in the KSA are not maintained, so there

was no such information to send. Moreover, the Saudi Physical Therapy Association agreed to invite all physiotherapists registered to participate in the current study. Convenience sampling was employed in the quantitative section (Cowan 2009). Because of the lack of information regarding the number of registered physiotherapists in the KSA, it would have been impossible to conduct random sampling. An online survey was designed to investigate current physiotherapy practices for managing CLBP in the KSA. Using a postal self-reported survey is not the ideal method to collect data in Saudi Arabia, as many householders do not have an active national postcode. Thus, email or online surveys were considered as another alternative.

3.2.1.1.3 Bias

The advantage of using a quantitative study is the ability to generalise the findings of the study to larger populations. Wide, representative, randomised samples are usually included to minimise any possibility of bias. For example; the ideal recruitment method would have minimised any potential bias by providing equal opportunity for all physiotherapists working in out-patient departments in the KSA to be invited; however, this would have required an accurate, up-to-date list of all MSK physiotherapists, and this is not currently available in the KSA. An alternative method was to create a list of hospitals and healthcare centres from the Ministry of Health and City Council to be combined for randomisation. This helped to provide an up-to-date list of private and public hospitals to be used in the current research, to minimise any probability of selection bias (Sedgwick 2015).

Physiotherapists could have been recruited from hospitals, healthcare centres and physiotherapy clinics. Large, small and medium-sized organisations in the private

and government sectors in the KSA could have been contacted to ensure that the samples would be representative of the KSA population. However, the KSA has a wide area of 2206714 km² (UN 2014), making it difficult to conduct the research throughout the country. The population in two regions, Riyadh and Makkah, makes up 50% of the total population (CDSI 2010). Thus, the researcher could have conducted this research in the largest cities, Riyadh and Jeddah, in the Riyadh and Makkah regions. This would have made the research more feasible in terms of time and costs than if the research had been conducted across the entire country. However, limiting this study to the two biggest cities could have biased the results, as the quality of hospital facilities, availability of skilled therapists and continuing professional development (CPD) training may differ between large and small cities. Thus, it seemed that the only feasible method to provide a wider and more representative sample was to recruit potential participants via the Saudi physical therapy association to participate in the current study.

3.3.1.2 The qualitative section

The primary purpose of this section was to explore patients' and physiotherapists' perceptions and understanding of self-management for CLBP. Chapter five presents patients' perceptions, beliefs, expectations and satisfaction levels regarding the physiotherapeutic management of CLBP, specifically concerning self-management. Physiotherapists' perceptions and understandings of self-management in treating CLBP patients are discussed in chapter six. A qualitative method using semi-structured interviews was employed and framework analysis was employed to analysis data in these two studies (Robson 2002; Ritchie et al. 2014). This is important because a qualitative method and framework analysis can help to provide

better insight into patients' and physiotherapists' perceptions of self-management. Moreover, the intent of the research questions was to increase understanding of a specific phenomenon (self-management) to help various stakeholders improve the quality of care and change healthcare policies.

Using semi-structured interviews tends to make respondents more comfortable, and it can give patients the feeling that their privacy is protected; this may also help to prevent participants from holding back any negative ideas or experiences they may have had regarding treatment or general concerns about physiotherapy services. This seems to be important for enhancing the credibility of the research findings (Ryan 2007).

Previous researchers have claimed that it is difficult to conduct semi-structured interviews in the KSA (AlKhatrawi 2013), as people are not familiar with this type of research and participants seem to interact on a limited level during interviews. However, multiple studies in various fields have used personal interviews in the KSA (Haniffa and Hudaib 2007; Alqahtani 2012). Perhaps a lack of previous experience conducting semi-structured interviews led to limited interactions with some researchers. Probing techniques could help to obtain more information from participants without directing them (Bowling 2002). Probing techniques could help to obtain more information from participants without directing them (Bowling 2002). For example, researchers could ask, “*Can you tell me a bit more about that?*” (Gill et al. 2008, p.292). It is important to use probing questions after unbiased questions for greater clarification, and to help researchers ensure that participants understand questions (Brod et al. 2009). In the current research, the participants were

encouraged to expand on a particular idea by using probing questions such as, 'can you give me an example' or 'could you tell me more about that?'.

This research made use of semi-structured interviews because they give researchers flexibility in terms of the order of questions (Louisebarribal and While 1994), thereby assisting both the researcher and respondents by giving respondents more freedom to talk about what they consider important. At the same time, they give the researcher the ability to prioritise the questions based on interviewees' responses while maintaining a coherent structure by ensuring all the questions in the topic guide have been covered.

A topic guide was used during the semi-structured interviews. This was developed after reviewing the relevant literature, to ensure that all patients responded to the same questions.

All interviews were conducted in the hospital meeting room or quiet room. Moreover, female patients were interviewed with a family member in attendance for cultural reasons.

Focus groups were considered as an alternative method for collecting data from physiotherapists. The main benefit of using focus groups is that some ideas can be developed during discussions that may be difficult to recognise in interviews (Barbour 2007). Moreover, because male and female physiotherapists work together in hospitals and attend regular department meetings in the KSA, it would have more convenient and less time consuming to conduct one focus group at each organisation than to arrange separate meetings for each interview. The purpose was to collect data from physiotherapists via focus groups including 3–6 participants of both genders. However, staff and management thought it would be difficult to

arrange focus groups for 3–6 physiotherapists while they were on duty because this would have negative effects on patient care. Moreover, moving a focus group to a time when the physiotherapists were not on duty would reduce the number of potential participants and could make it difficult to conduct the focus group. After consultations with management and senior staff members, the researcher ultimately decided to replace focus groups with semi-structured interviews for the physiotherapist study due to practical reasons, as it would have been infeasible to arrange focus group meetings.

Data analysis started early during data collection. A framework analysis was used in this study (Ritchie and Spencer 2002). The advantage of selecting a framework analysis is that it improves the rigour of data management (Tobin and Begley 2004), since it has a clear and rational order that is easy to follow and apply. The current research investigates particular phenomena (patients' and physiotherapists' perceptions of self-management for LBP) that have been described theoretically and discussed in the previous literature in developed countries (Morris 2004; Crowe et al. 2010). Moreover, a practical reason for using framework analysis was the lack of awareness of qualitative research including healthcare professionals in the KSA. Many healthcare professionals and policymakers have a biostatistical and medical background that could affect the way they assess the quality and acceptance of evidence. The debate concerning the quality assessment and validity of qualitative research has been a common issue in the past. Thus, using framework analysis allowed a transparent audit process with a clear and rational order to be used; this helped to enhance the rigour of the study and ultimately the research findings (Ritchie and Lewis 2003). Moreover, framework analysis was developed by social policy researchers at the National Centre for Social Research in the UK, and it is

used by the Government Chief Social Researcher's Office (Spencer et al. 2003). This could give the method more credibility among healthcare policymakers in the KSA.

All interviews were recorded, transcribed and coded in Arabic or English. The framework analysis was used to analyse the data. This analysis comprised five data processing phases. The first phase was *familiarisation* with the data; in this stage, the researcher spent time reading the transcripts and listening to the recorded tapes a minimum of twice before starting data analysis (Ritchie and Spencer 2002). This was done to enhance the quality of extracted themes, as the researcher had sufficient time to immerse himself in the data before starting data analysis (May 2001).

Identifying themes was the next stage of framework analysis. In this stage, the researcher extracted the themes from the transcripts and fieldnotes that were taken during the interviews.

Indexing was the third stage of the analysis process. Each theme was linked to the relevant part of the transcript. The researcher used numbers to identify each part of the data in the transcript. This saved time and reduced the possibility of data loss. In the current research project, the researcher used ATLAS.ti software for indexing.

The next stage of data analysis was *charting*. Identified data from the indexing phase were transferred from the transcript to a chart. The advantage of this chart is that it allows themes and subthemes to be presented next to the related extracted data. This is important because it can improve the dependability of research (Schwandt 2007), as it illustrates the logical process of developing the themes.

Mapping and interpretation was the last phase in the framework analysis. All themes were presented with an explanation to allow readers to understand how each theme was developed. The explanation was developed based on participants' perceptions of the phenomena (Ritchie and Spencer 2002); this was done to reduce potential bias due to the researcher's assumptions or experiences.

3.3.1.2.1 Sampling

The purposive sampling method was utilised for both patient and physiotherapist recruitment to ensure participants came from various backgrounds and had a variety of demographic characteristics and experiences. The aim of this was to help the researcher recruit participants with wide-ranging, diverse experiences and backgrounds. Recruitment of participants for the qualitative study was limited to one city (Jeddah). This stage required more arrangements with participants in terms of determining suitable times and places. Making these arrangements in advance prevented the researcher from needing to travel between cities several times, thereby saving time and resources. However, because the purpose of qualitative research is to provide insight and in-depth exploration of specific phenomena, such as perceptions and personal experiences, and not to generalise the findings to a large population group (Lapan et al. 2012), it was reasonable to conduct the qualitative study in one city. Another factor in choosing this location was that Jeddah is considered the second biggest city and the economic hub of the country. More details regarding recruitment and sampling are provided in chapters five and six for patients and physiotherapists, respectively.

3.3.1.2.2 Quality assessment

The main researcher analysed all data independently. Moreover, two reviewers separately analysed approximately 25% of the data. One reviewer held master's degrees (M) and the second held a PhD (TA); all were familiar with qualitative research and framework analysis. After themes were extracted by each reviewer independently, an online meeting was arranged to discuss and agree on the final themes. This served to enhance the credibility of themes, thereby having a positive effect on the quality of the study (Richards 2009). A fourth reviewer (SM) was consulted if disagreement occurred between the reviewers on particular themes.

The researcher is a physiotherapist by profession, and this may have had a negative influence on the research findings, as patients may have held back information, especially related to negative experiences with physiotherapy services. Moreover, the researcher may have had some prior assumptions that could have negatively influenced the data collection and analysis process and ultimately research findings. For these reasons it was ensured that the patients that were interviewed could not have been treated by the researcher previously to minimise the possibility of such bias (Finlay 2006). In any case, the researcher had previous experience conducting similar research in a master's programme and had an understanding of reflexivity, which means that a neutral attitude should be maintained during data collection and all previous assumptions should be set aside (Pope and Mays 2006).

To enhance the research quality during the qualitative research section, quality factors, such as credibility, dependability, transferability and conformability, were consistently monitored during all stages of qualitative research (Ryan et al. 2007; Ritchie et al. 2014). In the qualitative stage, the researcher adhered to the quality

framework (Spencer et al. 2003). This framework provides a clear, rigorous process for all qualitative stages. It starts with a purpose and design to find the method and report findings. It contains a checklist including 18 items.

3.3.1.2.3 The translation process

In the qualitative section, data analysis was conducted in the original language of transcription, which was either Arabic or English. Some researchers have suggested that it is important to delay the translation process to minimise the probability of misunderstanding some phrases from the original language (Temple and Young 2004). In the current study, the final results were translated into English by two researchers to ensure the researcher was working with text that closely resembled the original transcript and to minimise the data lost in analysis due to translation difficulties.

The translator's role in qualitative research has been discussed in a previous study (Van Nes et al. 2010). It was found that this role is affected by the researcher's position in terms of the epistemological perspective. It is impossible to translate word for word between languages (Temple and Edwards 2002). An interpretative view was adopted, which considers that there is no one correct way to see the world; this led to the adoption of a translation method that focussed on conceptualisation and context rather than word-for-word translation (Temple and Young 2004). An individual (translator) is usually influenced by previous life experiences, such as his/her social status and career (Young 1997). Thus, it is important to consider theory-based translations according to the context rather than exact translation. This is clear because language is not just words; rather, it has cultural, social and political aspects (Simon 1996; Temple and Edwards 2002). Therefore, it is important for

researchers and translators to acknowledge the significance of reflexivity in the translation stage. Researchers conducted forward and backward translations, as they are both bilingual (Arabic and English). The first reviewer holds a master's degree, while the second reviewer holds a PhD in physiotherapy. Thus, they could help the researcher to maintain reflexivity during translation and revisit the original data to minimise loss of meaning from the original source. After consensus was reached between the two reviewers, the final translations of quotations were sent to an independent bilingual researcher. This individual holds a master's degree. The final version of the translated quotations was agreed on by the three researchers.

3.4. Ethical considerations

Participant confidentiality was considered in this research. All participant data were saved on a secure computer and as a hard copy kept in a locked locker. This was important to maximise the confidentiality of potential participant data. Data collection was initiated after gaining ethical approval from Sheffield Hallam University and approval for conducting the research from several organisations in the KSA (See Appendix 1).

It was clearly stated that participation in this research was voluntary and that declining to participate would have no impact on a patient's treatment or the physiotherapist's career. No financial benefits were given to the participants. In addition, participants who had any questions were encouraged to contact the researcher. If patients had difficulty understanding the information sheet or consent form, the researcher read and explained the information again before the patients were asked to sign the consent form (See Appendixes 2, 3.1, 3.2).

It was clearly stated in the information sheet that after discussing the results of this study with the supervisory team, the researcher would publish the study results in a journal. It was clarified that all data will be published anonymously and that participants would be provided with a summary of the study results if interested.

Chapter Four: Quantitative Section – An investigation of current physiotherapy practices used for the management of chronic low back pain in Saudi Arabia

4.1 Introduction

This chapter provides a description of the first study in this research project. An online survey was designed, and physiotherapists in the KSA were invited to participate in the research. The purpose of the survey was to explore the current physiotherapy management of CLBP in the KSA. In this chapter, recruitment, sampling, data collection, data analysis, results and discussion for the study are described. The justification for the methodology was discussed in depth in chapter three.

4.2 Aim

The primary purpose of this study was to explore current physiotherapy practices for treating CLBP in the KSA. The secondary aim was to identify physiotherapists' levels of familiarity with self-management concepts and their elements. The quantitative method used in this mixed-methods study allowed exploration of current physiotherapy practices for CLBP management within a specific population.

4.3 Research Question

The research question for the study is as follows: What is the current physiotherapy practice for managing CLBP in the KSA?

4.4 Method

4.4.1 Study Design

The quantitative section was the first part of this mixed-methods study. An online survey was designed to investigate current physiotherapy practice for managing

CLBP in the KSA. Data were collected from physiotherapists in the KSA through the Saudi Physical Therapy Association (SPTA) between March and May 2016.

4.4.2 Sampling and Recruitment

An invitation letter was sent to the SPTA. The invitation letter, which included the Sheffield Hallam University logo and the signature of the director of the study, briefly explained the study and requested permission to recruit physiotherapists through the organisation. All SPTA members, comprising 1075 physiotherapists, were invited to complete the online questionnaire via an email through the SPTA. This invitation gave an overview of the purpose of the study in both Arabic and English. Moreover, it included links to the Arabic and English versions of the survey. This helped participants to select their preferred language in completing the survey.

On the introduction page of the online survey, the researcher clearly stated that all physiotherapists had the right to accept or refuse participation in the study, making participation completely voluntary. Moreover, a full information sheet and consent form was provided online (See Appendix 2). To ensure that only participants who met the inclusion and exclusion criteria could complete the survey, participants were requested to answer 'Yes/No' questions indicating whether they met the criteria and provided consent to participate (see Table 7). Only participants answering 'Yes' could go on to complete the survey. Other respondents received an appreciation message from the researcher but were not given the option to finish the survey.

Email reminders were sent to all physiotherapists at 3 and 5 weeks after the first invitation to maximise participants' response rate. The first invitation was sent at a weekend (Friday and Saturday), while the other reminders were sent on workdays

(Sunday-Thursday). This was done to ensure that all participants had the time to respond and access to the internet, thereby potentially increasing the response rate.

Table 7. Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
Physiotherapists who have two or more years of clinical experience with musculoskeletal practice.	Physiotherapists who work only with inpatients.

4.4.3 Survey Design and Development

A literature review was conducted to explore whether any relevant questionnaires had been used in previous literature. Since limited information is available about physiotherapy services for CLBP patients, the scope of the questionnaire was expected to cover wide elements of practice structures. For example, the main domain needed to discuss the goal of physiotherapy treatment and physiotherapy management, including treatment and assessment. Moreover, other factors, such as the availability or use of specific guidelines and protocols for treating CLBP patients, were considered. In addition, it was necessary to identify those elements that would help the researcher to gain a greater understanding of the current physiotherapy practice for CLBP in the KSA and explore physiotherapists' awareness of self-management. From the results, more in-depth exploration of aspects related to self-management or that influence the adoption of self-management could be conducted in future qualitative studies in this research project.

After the literature review and the exclusion of studies focussing on specific aspects of exploring physiotherapy practice for LBP, such as adherence to evidence-based practice and adopting the biomedical or biopsychosocial model, the researcher identified six questionnaires related to exploring physiotherapy practice for LBP (Battie et al. 1994; Jette et al. 1994; Van der valk et al. 1995; Jette and Delitto 1997; Mielenz et al. 1997; Foster et al. 1999). However, these surveys were all created in developed countries. Moreover, most of them were developed more than 20 years ago, and physiotherapy practice has changed in this time due to the adoption of evidence-based research recommendations. Thus, such surveys may not represent current physiotherapy practice.

Another three questionnaires (Pensri et al. 2005; Fidvi and May 2010; Oppong-Yeboah and May 2014) were adopted completely or with some modifications from a previous questionnaire (Foster et al. 1999). These three studies were conducted in developing countries in Asia and Africa. It seems that the main reason why the researchers adopted this survey (Foster et al. 1999) was that it covered the main domains related to exploring physiotherapy practice for LBP in countries where limited information is available about physiotherapy practice in general. For example, the survey (Foster et al. 1999) contained three main sections on patients' characteristics, physiotherapists' information and physiotherapy treatment and outcomes.

The main aim of the current study was to explore the daily treatment and assessment for CLBP used at present in physiotherapy in the KSA. This objective is similar to those of previous studies (Foster et al. 1999; Pensri et al. 2005; Fidvi and May 2010; Oppong-Yeboah and May 2014), except that these studies did not distinguish between chronic and acute LBP. Moreover, questions about self-

management were not included in the previous surveys. Thus, adopting the previous surveys without modifications could lead to only a partial achievement of the research objectives of the current study.

The original survey (Foster et al. 1999) was developed based on the findings of interviews with physiotherapists who had clinical experience in dealing with LBP patients. These interviews helped the researchers to develop a self-report questionnaire after extracting the themes from the interviews. It has been reported that using qualitative studies can help to identify themes that will facilitate the development of a survey instrument (Ritchie et al. 2014). Moreover, two pilot stages were conducted that included 20 and 57 physiotherapists to test the survey before starting data collection (Foster et al. 1999). However, it was not clear if the researchers explore the content validity of the survey. At the same time, the researcher presented more information concerning the sampling method adopted in this study and how it enhanced the external validity of the study. It seems that other studies adopting the survey (Foster et al. 1999) have not tested the content validity of the questionnaire (Oppong-Yeboah and May 2014). This may had a negative effect on the quality and validity of the study findings.

Ideally, data should be collected using a questionnaire that already exists and has been validated. However, no such questionnaire has been developed and published in an Arab country with a healthcare system similar to that of the KSA. Thus, the researcher decided to develop a survey comprising the main domains used in previous research (Foster et al. 1999; Pensri et al. 2005; Fidvi and May 2010; Oppong-Yeboah and May 2014); these surveys were modified to meet the current research aims. Moreover, four senior physiotherapists from both public and private healthcare settings in the KSA were consulted and interviewed informally by

telephone to explore physiotherapy treatment goals and physiotherapy treatment and assessment methods that are frequently used for CLBP in the KSA. Both the private and public healthcare settings were included because the physiotherapy management methods and patient characteristics may differ in the private setting compared to the public sector (Casserley-Feeney et al. 2008).

After identifying the main domains and considering the physiotherapists' recommendations, the initial survey was developed to include three main sections – treatment sessions and patient characteristics, physiotherapist management approach (assessment and treatment) and physiotherapist background information.

The questionnaire's validity was monitored during the research design by identifying a clear research question and objectives before questionnaire development began. During questionnaire development, the research purpose and questions were defined in the guiding domains (questions), with each domain including several questions relevant to the research objectives (see Table 8; Portney and Watkins 2009). Furthermore, a preliminary draft of the questionnaire was reviewed by the supervisory team and two colleagues who are bilingual Arabic/English speakers and qualified physiotherapists, one of whom holds a master's degree and the other a PhD. The researcher considered the reviewer recommendations and submitted the draft questionnaires to be reviewed again before starting the pilot stage. The aim of these steps was to enhance the content validity of the questionnaire (Portney and Watkins 2009).

A 5-point scale was used for ranking participants' responses with regard to exploring their opinions of such issues as the frequency of using a particular treatment (Dawes 2008). It is important to consider the time required to complete survey questions to

minimise participants' lack of interest (Preston and Colman 2000). Online surveys are associated with a lower response rate than paper surveys (Nulty 2008), so it appears that the time required to complete the survey should be considered a priority.

The items in the categories in the present survey were developed in consultation with two researchers holding a degree in physiotherapy and postgraduate education. Moreover, previous studies have helped in developing and designing answer categories (Foster et al. 1999; Pensri et al. 2005; Fidvi and May 2010; Oppong-Yeboah and May 2014). For example, technical information, such as physiotherapy treatment, was identified by the researcher, and the research question and answer categories were developed and modified based on the opinions of the two researchers with physiotherapy qualifications. Moreover, items related to patient characteristics and physiotherapist background information were initially driven by the literature and two senior physiotherapists working in KSA helped in implementing some changes to ensure that the items of this survey items represented the Saudi context . It is appears reasonable to use expert opinions, particularly considering the limited amount of published information regarding patients and physiotherapy in the KSA.

4.4.3.1 Pilot Stage

The online English version of the survey was completed and tested by 10 physiotherapists to assess face validity. These physiotherapists were working in both the public and private sectors and had various levels of clinical experience concerning MSK conditions; the minimum inclusion criteria were 2 years' experience with MSK problems.

Table 8. Example of survey development process includes domains and research objective

Research objectives*	Domains	Items (research question)
1	Treatment sessions and patient characteristics	1-7
1	Physiotherapist management approach (Goal of treatment)	8. What is your primary goal for CLBP patients?
1	Physiotherapist management approach (Assessment)	9. Do you use any of the following outcome measures to assess CLBP patients?
1	Physiotherapist management approach (treatment or assessment)	10-13,15,16
1,2	Physiotherapist management approach (treatment)	14
2	Physiotherapist management approach (treatment)	17
1	Physiotherapist background information	18-31

* **Research objectives;** 1.Exploring current physiotherapy practice for CLBP in KSA.

2. Identify physiotherapists' levels of familiarity with self-management concepts and their elements

Participants commented on the survey contents, clarity and structure. For example, for some questions, a scale (5 point) was employed for ranking, and participants preferred using the lower number for the least frequently used treatment. Moreover, the option 'not applicable' was added to the scale and multiple responses were allowed for some questions in the revised version. In terms of contents, the pilot survey respondents only asked for one question to be deleted because it was too similar to other questions in the survey. The respondents also suggested enhancing the clarity of some questions, such as changing '*How long have you held your*

physiotherapy qualifications?’ to ‘How many years of experience do you have in physiotherapy?’.

Furthermore, the time it took for each participant to complete the survey was monitored. This was done to enhance the estimation of the average time required by each participant to complete the survey. The survey needed to be relatively short because a long survey could reduce the response rate; this would have a negative effect on the quality of the study findings (Rindfuss et al. 2015).

After the pilot study comments and suggestions were reviewed and agreed upon between the main researcher and the supervisory team, the final design for the survey was reached (see Appendix 4). The questionnaire was translated from English to Arabic and vice versa, and the researcher used translation recommendations as a guide for the translation process (Beaton et al. 2000). Such recommendations included forward and backward translation and employing certified translators to enhance the translation process. This guideline was followed to help maintain the content validity of the survey.

Because physiotherapists in the KSA use the English language in both education and clinical practice, the names of particular treatment methods and techniques were not translated to minimise confusion. The Arabic version of the survey was tested by 11 physiotherapists to examine the clarity of the questionnaire contents. In physiotherapists’ comments on questions that included a ranking scale, they preferred to use a scale of 1–5 for all questions that included ranking.

4.4.4 Data Analysis

The researcher used SPSS (IBM, version 22) software, which provides user-friendly statistical tools. Descriptive statistics were compiled using frequencies and percentages. Moreover, Pearson's χ^2 and Fisher's exact test were used to examine the associations between variables in the study. The relationships were considered statistically significant if $p < .05$. Answers to open-ended questions were coded and entered into the analysis.

A set of independent and dependent variables were included in the analysis after data collection. Variables like age, gender, postgraduate degree, grade (seniority), work setting, nationality, first language, city, percentage of patients with CLBP in physiotherapists' weekly caseload and experience were analysed.

4.5 Results

From 1075 physiotherapists invited via the SPTA, 187 (17%) participants responded to the invitation and entered the first page of the survey. However, only 101 (9%) participants completed either the Arabic or English version of the survey to the end, and were included in the final results. It was impossible to identify the reasons and characteristics related to non-response because the data protection guidelines the SPTA follows does not allow members' contact information to be shared.

The researcher developed and tested the online survey to minimise dropout, and the estimated time to complete the survey was 15 minutes. Out of 187 participants, 132 started the Arabic version and 55 started the English version. Nine of the participants did not meet the inclusion criteria and left the survey. However, 44 participants met the inclusion criteria but did not answer any questions. In addition, 28 completed the

first section and 5 responded to the end of second section. Thus, the researcher decided to exclude participants (72, 38%) with missing data from the analysis because the demographic information was included in the last section.

4.5.1 Participants' Characteristics

Participants' demographic information is provided below (see Table 9). Participants in the current study were from 18 cities, representing 11 out of 13 regions in the KSA. The participants tended to be younger in age, and half were junior physiotherapists with 5 years or less of experience. Moreover, the difference between genders was obvious, as only 25% of participants were female. However, almost 60% of participants worked in the public healthcare setting.

In terms of education, most participants held a bachelor's degree, while around 40% had postgraduate qualifications, many from Western institutions. Of the physiotherapists participating in this study who held a postgraduate degree, 55% had been earned from universities in the United Kingdom, United States, Canada and Australia. In addition, most participants reported that Arabic was their first language, at around 86%.

Table 9. Participant's characteristics (N = 101)

Participants variables	Frequency	Percent
Gender		
Male	75	74
Female	26	25
Age		
23-29	43	42
30-35	40	40
36-40	8	7
41-44	6	5
>45	4	4

Participants variables	Frequency	Percent
Nationality		
Saudi	80	79
Non- Saudi	21	20
Experience		
2–5 years	45	44
6-10 years	28	27
11-19 years	22	21
More than 20 years	6	5
Grade		
Physiotherapy assistant	6	5
Junior physiotherapist	53	52
Senior physiotherapist	26	25
Clinical specialist	8	7
Supervisor	5	5
Head of department	2	2
Lecturer	1	1
Health care sitting		
Public setting	59	58
Teaching hospital	2	2
Private hospital	14	13
Private setting	3	3
Military hospital	20	19
University	2	2
charity Hospital	1	1
Undergraduate Qualification		
Bachelor's degree	87	86
Three-year diploma	12	11
Two-year diploma	2	2
Postgraduate qualification		
None	63	62
High certificate or diploma	6	5
Master's degree	22	21
Doctor of philosophy (PhD)	7	6
Doctor of physical therapy	3	3

Participants variables	Frequency	Percent
Country undergraduate degree		
	80	79
Saudi Arabia	21	20
Other		
Country postgraduate degree*		
Saudi Arabia	10	26
United Kingdom	14	36
United States of America	5	13
Other	18	17
First Language		
Arabic	87	86
English	3	3
Other	11	10
Second Language		
English	97	96
Others	4	3
City		
Jeddah	29	28
Riyadh	20	19
Al Jouf	11	10
Other	41	40

In the current study, most participants (79, 78.2%) had attended CPD training. The Mulligan concept was the most frequent type of CPD training course; such courses had been completed by 47 participants (46.5%). The next most common CPD course was McKenzie (MDT), which had been attended by 46 participants (45.5%). Courses on the Maitland technique had been completed by fewer participants (31, 30.7%) compared with the Mulligan and McKenzie approaches. Acupuncture and other passive techniques and modalities were similar in terms of the number of participants attending CPD in these areas, with 19 participants (18.8%) for each. The

least common CPD courses were specific disease workshops, attended by 6 participants (5.9%), and cognitive behavioural therapy CPD courses attended by 1 participant.

4.5.2 CLBP Patients' Characteristics and Treatment Sessions

Participants described most CLBP patients who visited physiotherapy as middle aged. Thirty-nine participants (38.6%) perceived that CLBP patients are usually 35–44 years of age. Moreover, 44 participants (43.6) estimated that patients are generally 45–55 years old. It appears that younger (21–34 years) and older (over 55 years) CLBP patients attend physiotherapy sessions less frequently (see Table 10).

The reported compliance of CLBP patients with the treatment program differed based on participants' experience. For example, the data showed that 29 participants (28.7%) agreed that 26–50% of CLBP patients usually attend to physiotherapy treatment. Furthermore, 55 participants (54.5%) estimated the percentage as 51–75%, indicating a high attendance rate at treatment for CLBP patients.

In term of participants' daily practice and the type of patients usually treated on a weekly basis, 51 participants (50%) estimated that 26–50% of their weekly patients were those diagnosed with CLBP. Moreover, 29 (28.7%) participants estimated that 51–75% of their weekly patients had been diagnosed with CLBP (see Table 10). Participants estimated the average number of CLBP patients they treat daily; most participants (around 80%) estimated that they treat either 1–3 or 3–5 CLBP patients per day.

Based on 78 (77.2%) participants' observations, the cost of physiotherapy services for CLBP is usually covered by government funding. The second source of physiotherapy funding was private insurance, as confirmed by 19 participants (18.8%). Eighteen participants (17.8%) participants estimated that self-funding was the least frequent method by which patients covered the costs of physiotherapy treatment for CLBP.

Table 10. CLBP Patients characteristics and treatment sessions estimated by participants (N = 101)

Estimated CLBP	Frequency	Percent
Patients age		
21–34	6	5.9
35-44	39	38.6
45- 55	44	43.6
More than 55 years	12	11.9
Estimated weekly caseload of patients with CLBP		
1%–25%	18	17.8
26%–50%	51	50.5
51%–75%	29	28.7
76%–100%	3	3.0
CLBP patients daily on average		
1-3	43	42.6
3-5	41	40.6
5-10	17	16.8

The most common type of physiotherapy session for CLBP patients was individual sessions, with 78 participants (77.2%) ranking individual sessions at 5 (the highest rank) on a 1-5 scale describing frequency of intervention use. The remaining 23 participants (22.7%) have ranked individual sessions between 1 and 4 points on the 5-point scale. Group sessions seemed to be adopted less frequently by

physiotherapists to treat patients with CLBP, as 43 participants (42.6%) selected 'not applicable'. Moreover, the use of non-face-to-face approaches, such as telephone- or internet-based sessions, was very low, with around 65 participants (65.3%) indicating that it was not applicable to their daily practice for CLBP.

The length of physiotherapy sessions for CLBP varied. Most participants (72 participants, 71.3%) reported the length of physiotherapy sessions was 30–45 minutes. Twenty-one participants (20.8%) stated that physiotherapy sessions for CLBP patient could be less than 30 minutes. Finally, a limited number of participants (8, 7.9%) reported that the sessions could extend to more than 40 minutes.

4.5.3 Physiotherapists' Management Approaches

4.5.3.1 Treatment Goal and Assessment

Most participants (46 participants, 45.5%) considered decreasing pain as the primary goal during treatment of CLBP patients. Improving CLBP function was the second goal, as selected by 28 participants (27.7%). The other goals seemed to be less important, and these included increased muscle strength, decreased muscle spasms, increase range of motion (ROM) and other goals (see Table 11).

Multiple responses were allowed to determine the most frequent outcome measured used in daily practice to manage CLBP patients. The most common outcome measure used by participants (64 participants, 63.4%) in daily practice during treatment of CLBP patients was pain focussed outcome measure the visual analogue scale (VAS). Furthermore, functional outcome measures, such as the Oswestry Low Back Pain Disability Questionnaire, the Quebec Back Pain Disability Scale and the Roland–Morris Disability Questionnaire, were used by participants to

measure CLBP patients' progress. However, the number of participants using functional outcome measures was clearly less than that using pain-focussed outcome measures (see Table 12). Moreover, several participants (6 participants, 5.9%) did not use any outcome measures to assess CLBP patients' progress, and two participants considered screening tools (LANSS and STarT.Back) to be outcome measures.

Table 11. Physiotherapist primary goal for CLBP patients.

Physiotherapist primary goal for CLBP patients	Frequency	Percent
Decrease pain	46	45.5
Increase muscle strength	15	14.9
Decrease muscle spasms	2	2.0
Improve functioning (active daily life)	28	27.7
Increase range of motion (ROM)	3	3.0
Other; Decrease pain/or muscle spasms, increase ROM and strength	2	2.0
Other; Full recovery	1	1.0
Other, All above	2	2.0
Other, Depend on conditions	1.0	1.0
Others; posture correction	1.0	1.0

4.5.3.2 Physiotherapy Treatment

All participants used exercise when treating CLBP patients, and most participants (72, 71.3%) selected exercise as the most frequent method of treatment they used to help CLBP patients to manage their condition. Advice and patient education represented the second most common method of treatment used for CLBP, as reported by 68 participants (67.3%); only two participants (2%) reported that they do not use advice.

Table 12. Outcome measure used for CLBP patients.

Outcome measure used for CLBP patients.	Frequency	Percent
Visual Analogue Scale (VAS)	64	63.4
Oswestry Low Back Pain Scale	23	22.8
Quebec Back Pain Disability Scale	8	7.9
Roland Morris Disability Questionnaire	3	3.0
None	6	5.9

Manual therapy and electrotherapy both received similar responses in terms of ranking common treatment method, as they were used by 32 and 39 participants (31.7% and 38.6%), respectively. Moreover, only three participants did not use manual therapy or electrotherapy in their daily practice to treat CLBP patients. Using massage was not a common method, as 33 participants (32.7%) reported that it was not applicable to their routine practice for treating CLBP patients. However, 37

participants (36.6%) indicated that they did use massage as a treatment method for CLBP patients, but they chose the lowest rank (1) for using massage on a scale of 1–5.

Other treatments were reported by some participants in the open-ended survey questions. These methods were combined under three broader categories as follows: other passive techniques and modalities, holistic integrated therapy and hydrotherapy. Nine participants reported using passive techniques and modalities, while only 1 participant selected each of holistic integrated therapy or hydrotherapy.

Participants estimated the time allocated for each treatment method used when working with CLBP patients. It seems that participants varied in terms of allocated time for the following treatment methods; advice and patient education, electrotherapy, exercise, manual therapy and massage.

The McKenzie approach was the most common technique used by participants (93, 92%) for patients diagnosed with CLBP. Furthermore, 54 participants (53.5%) ranked using McKenzie approach with 5 on a scale of 1–5, with 5 indicating the highest score. Use of manual therapies, such as the Mulligan concept, Maitland mobilisation, Cyriax and other techniques like osteopathic and chiropractic therapies, were reported. However, the frequencies of using particular manual therapies seemed to vary among the participants. For example, the Mulligan concept was reported by 84 participants (83.2%), while only one-quarter of participants gave it the highest score of 5. The second most common manual therapy technique was Maitland mobilisation; 80 participants (79.20%) reported using the Maitland approach to treating CLBP patients, but fewer participants (16 participants, 15.8%) scored Maitland mobilisation with 5 points compared with the Mulligan concept. However,

other manual therapy techniques, such as the Cyriax, osteopathic and chiropractic approaches, were less popular. Sixty-one participants (60%) used Cyriax, but only 5 participants gave it a score of 5 points as the most frequent method of treatment. Moreover, only 4 participants had used osteopathic and chiropractic techniques combined.

Most participants (96 participants, 95%) used hot packs in their daily practice for managing patients diagnosed with CLBP. Seventy participants (69.3%) selected a score of 5 (1–5 scale), indicating that hot packs represent the most frequent modality used for CLBP compare to TENS, Interferential, Microwave, Infrared, Ultrasound, Laser, Short-wave diathermy and Traction. The second modality that was extensively used by participants (91, 90%) was TENS, and almost half of participants (48, 47.5%) gave TENS 5 points. A similar result was reported with another electrotherapy modality, with 87 participants (86.13%) using interferential electrotherapy, and 45 participants (44.6%) giving this modality a score of 5 points.

Ultrasound and traction were used by 81 (80%) and 76 (75%) participants, respectively, but 34 participants (33.7%) gave ultrasound 5 points compared with 23 (22.8%) giving traction the same score. However, many modalities were reported with few responses, and these seemed to be less frequently used in treating patients diagnosed with CLBP; these included infrared, short-wave diathermy, laser and microwave. Each of these modalities was used by less than 60% of the participants (Tables 8-11). Moreover, 10 participants identified using other modalities without providing more information.

Physiotherapists' methods of providing education for CLBP patients were considered in the questionnaire. All participants except one used general advice for CLBP

patients as part of the CLBP management programme. Moreover, 63 participants (62.4%) gave general advice a score of 5 points, indicating that they frequently use this method to treat CLBP patients in their daily practice. Promoting an active lifestyle was common advice (97 participants, 96%) provided to participants, and 58 participants (57.4%) gave this type of advice 5 points scale.

Use of a specific self-management model, such as cognitive behaviour therapy, was reported by 80 participants (79.20%). However, only 37 participants (36.6%) gave cognitive behaviour therapy 5 points scale. Moreover, 64 participants (63.36%) identified using other types of advice/education without giving more information. However, implementing self-management in daily physiotherapeutic practice for managing CLBP patients was reported by 62 participants (61.4%). A limited number of those participants identified the self-management approach; for example, self-mobilisation, general (e.g. exercise, verbal and written advice) self-management and McKenzie (MDT) were reported by 5, 14 and 1 participants, respectively.

The type of exercises that physiotherapists used in daily practice to treat patients with CLBP was discussed in the current study. Two common exercise methods frequently used by 98 participants (97%) were flexibility and strengthening exercise. However, strengthening exercise was rated with 5 points scale by 67 participants (66.3%) compared with 55 participants (54.5%) for flexibility exercise. McKenzie (MDT) exercise was often used by 91 participants (90%) to treat patients diagnosed with CLBP, and 40 participants (40.6%) gave MDT 5 points scale. Cardiovascular exercise was used by 84 participants (83.16%), and some participants (8, 7.9%) reported using other types of exercise without identifying the specific type (See Tables 11-15).

Use of guidelines or local procedures for treating CLBP at the organisational level was investigated in this study. Interestingly, most participants (78, 77.2%) reported that their organisations did not follow any guidelines for CLBP. Furthermore, participants who reported using guidelines or local procedures for CLBP did not provide enough information about these guidelines and only includes generic names, such as 'CLBP protocol' and 'back pain management protocol'.

4.5.4 Factors Associated with Adopting Particular CLBP Management Methods and Self-management

The relationship between adopting self-management by participants and various factors was tested; such factors included completing a postgraduate degree, country of postgraduate degree and physiotherapist grade. The researcher used the χ^2 or Fisher's exact test to examine the correlations between these factors and the use of self-management among participants. However, there were no significant associations between adopting self-management and the following factors: holding a postgraduate degree ($\chi^2=.005$, $p=.942$); country of postgraduate degree, categorised as developing or Western developed country ($\chi^2=.653$, $p=.419$) and physiotherapist grade ($\chi^2=.369$, $p=.544$).

Physiotherapists showed various levels of adoption of self-management. Participants working in non-profit healthcare settings, such as public, military and charity hospitals, appeared to use self-management more than physiotherapists in the private sector. Fifty-five participants (65%) who used self-management were working in the non-profit healthcare setting, while 29 participants (34%) were not using self-management in a non-profit setting. In comparison, in the private sector, only 7 participants (41%) reported using self-management, and 10 participants (58%)

indicated they did not use self-management. After testing the association between use self-management and the workplace using the χ^2 test, no significant relationship appeared ($\chi^2=2.571$, $p=.109$).

The relationship between following a particular fixed procedure or standardised guidelines for treating CLBP in the participants' organisations and the use of self-management in daily physiotherapy practice was examined. Only 17 participants (27%) used self-management in the organisation following a particular fixed procedure or standardised guidelines for treating CLBP; in contrast, 45 participants(72%) did not follow any guidelines for CLBP. The χ^2 test identified no association between the two factors ($\chi^2=1.347$, $p=.246$).

Interestingly, for most participants (44) using self-management, their main goal was not improving CLBP patients' functions; in contrast, it was the main goal for 18 participants. The χ^2 test showed no association between the two ($\chi^2=.020$, $p=.887$). Moreover, there was no association between having decreased pain as a main goal of treatment for CLBP patients and using a pain-focussed outcome measure, such as a VAS ($\chi^2=.000$, $p=1.000$). A similar finding was obtained for participants who considered improving function as the main goal of treatment, which showed no association with using functional outcome measures, such as the Oswestry Low Back Pain Scale, for CLBP ($\chi^2=1.267$, $p=.260$).

In the current study, participants' use of manual therapy was associated with attending CPD training relevant to the particular technique. For example, participants using Maitland mobilisation had generally attended a Maitland mobilisation CPD course, and the difference was significant ($\chi^2=6.912$, $p=.009$). Furthermore, attending a Mulligan concept course was significantly correlated with adopting the

Mulligan concept to treat patients diagnosed with CLBP ($\chi^2=8.323$, $p=.004$). However, an interesting finding was that not all CPD training courses enhanced the probability of using the associated technique; it appeared that attending a course on an active approach, such as; McKenzie (MDT) CPD training was not associated with implementing the McKenzie technique in daily practice managing CLBP patients. The lack of association may be due to the popularity of the technique: most undergraduate physiotherapy programs teach this method as part of the MSK curriculum.

4.6 Discussion

The participants in this study, recruited by convenience sampling, included people from 18 cities representing 11 of the 13 regions in the KSA. Approximately 40% of the participants had postgraduate qualifications, and almost 60% worked in the public healthcare setting. It has been reported that 60% of healthcare settings in the KSA are funded by the Ministry of Health (WHO 2006). It seems the sample group was sufficiently diverse to meaningfully explore the current management strategies physiotherapists in the kingdom use to treat CLBP; however, it is important to note that most of the physiotherapists were relatively young, half were junior physiotherapists with 5 or less years of experience, and only 25% of the participants were female. Further, an online survey was used to obtain the data. These sample and data-gathering characteristics limit the generalizability of the research findings, as they negatively affect how representative the sample is of the population of all working physiotherapists in the KSA (Etikan et al. 2016).

Despite limited generalizability, convenience sampling was a reasonable strategy since there were no methods to identify and invite the participation of all

physiotherapists in KSA, as discussed in the methods section of this research project. Because the main purpose of the study was to explore current physiotherapy practices used for the management of chronic low back pain in the KSA, and given the lack of any published information regarding characteristics of working physiotherapists in the KSA, convenience sampling seemed a reasonable way to provide initial information that can be built upon in the future with other studies using different samples and sampling techniques.

4.6.1 Patient characteristics

In this study, most CLBP patients who visited physiotherapy were described as middle aged. Forty-three percent of the participating physiotherapists estimated that patients are generally 45–55 years old, while 38% estimated a client age range of 35–44 years. This finding was similar to that of a previous study conducted in Thailand in which most of the participants (33%) described the age of patients with low back pain as between 46–55 years, 26% estimated typical patient age as between 36-45 years, and estimates of patients in the chronic stage were 27% (Pensri et al. 2005). Even more pronounced estimates were produced in a study conducted in Ghana, where the majority of physiotherapists (86%) believed both that patients with low back pain are 40 years or older and that the majority of patients (81%) have a chronic condition (Oppong-Yeboah and May 2014).

In contrast, studies conducted in the UK and India reported that most patients seeking treatment for low back pain were comparatively younger. Age estimates for patients typically struggling with CLBP in the UK study was 36-45 years, and in the Indian study, 20-40 years (Foster et al. 1999; Fidvi and May 2010). The age at which most patients seek help for chronic low back pain thus is not consistent across

studies, perhaps because those studies were conducted in different countries with populations marked by differing socioeconomic conditions. The relationship between patients' socioeconomic status and musculoskeletal conditions was examined in a cohort study which reported that patients with lower socioeconomic status tend to reach the chronic stage at the age of 45 years (Macfarlane et al. 2009).

One additional factor should be considered when comparing the age-range estimates of physiotherapists in this study to those in other published reports. In the previous published studies and in the current study, the physiotherapists' approximations were based on what they remembered, not on actual records. (Foster et al. 1999; Pensri et al. 2005; Opong-Yeboah and May 2014 ; Fidvi and May 2010). Thus, reported client characteristics depended on the physiotherapists' memory, the accuracy of which may have been negatively affected, due to recall bias (Coughlin 1990), which in turn would have affected how well their estimates represented the true typical age range of CLBP patients in the KSA. However, the reason for collecting information based on the physiotherapists' memory, rather than collecting an accurate record, may be due to the lack of national data and the difficulty of obtaining accurate national records for individual studies. It is clear that most of these studies have been conducted in developing countries, where limited resources are provided and a limited number of studies have been conducted.

The burden of CLBP on patients' life is not limited to pain and reduced functionality; it has social, psychological and financial ramifications as well (Hoy et al. 2010; Gore et al. 2012). Several studies have reported that CLBP rather than acute low back pain is the most frequent condition treated in public healthcare physiotherapy departments (Foster et al. 1999; Casserley-Feeney et al. 2008; Fidvi and May 2010). These results call into question the quality of early-stage healthcare being provided

to patients diagnosed with acute low back pain and the cost effectiveness of LBP treatment in the public sector. It is important to consider both patients' preferences and the need to provide healthcare based on recent evidence and clinical guidelines for delivering comprehensive, effective treatment (Siminoff 2013). Providing patient-centered health care service may empower patients to participate and actively self-manage their condition, thereby decreasing their dependency on healthcare services and reducing the length of patient waiting lists and the cost to national healthcare services.

4.6.2 Physiotherapists' characteristics and treatments sessions

As noted earlier, most of this study's participants were young, and half were junior physiotherapists with 5 years or less experience in the field. If this sample is representative of the professional population in the KSA, the relatively young age of healthcare providers is of concern, as a correlation has been reported between less experienced physiotherapists and more and longer sessions for patients with low back pain (Gracey et al. 2002; Whitman et al. 2004). This may lead to negatively affecting healthcare costs. However, around 40% of the participants in the current study held postgraduate qualifications compared to previous studies' reported rates of 7- 35% (Jette and Delitto 1997; Fidvi and May 2010; Oppong-Yeboah and May 2014), which perhaps counters the potential negative impact of professional inexperience.

In terms of service delivery, individual rather than group sessions were the most common type of treatment arrangement reported in this study. In fact, 42.6% of the participating therapists reported group treatment was not applicable to their daily practice for managing patients diagnosed with CLBP. This raises another question

regarding cost effectiveness, this time whether increased use of group sessions in the KSA could reduce the number of patients on waiting lists, especially since around 60% of the participants were working in public healthcare, and 77.2% of the estimated cost of physiotherapy services for CLBP is covered by government funding. A recent randomized trial reported that physiotherapist-led pain management classes (i.e., group therapy) that included a cognitive behavioural approach were more cost effective than were standard physiotherapy treatments for improving CLBP disability (Critchley et al. 2007). Further research is required to investigate barriers to use of group treatment in KSA.

The higher degree of efficacy associated with pain management classes may have been due to the inclusion of a cognitive behavioural approach promoting self-management as a key aspect of treatment (Critchley et al. 2007). A systematic review that investigated the effectiveness of cognitive behavioural treatment for low back pain found the method had positive effects on long-term disability, pain and quality of life (Richmond et al. 2015). Further research is required to investigate cost effectiveness and any potential barriers that may limit the use of cognitive behavioural treatment for patients with CLBP in the KSA. Qualitative studies to explore patients' and physiotherapists' perceptions of the utility of cognitive behavioural therapy also should be considered.

Earlier studies revealed that around 50% of patients diagnosed with CLBP seek treatment in a public facility, underscoring the high demand for public health services (Foster et al. 1999; Gracey et al. 2002), and in a more recent study, that number was even higher, with approximately 70% engaging public health options and only 2% using the private sector (Casserley-Feeney et al. 2008). Such high demand can be expected to lead to long waiting lists for physiotherapy treatment. It has been

reported that general practitioners make comparatively fewer referrals to public physiotherapy in Ireland, where 40% of patients have been referred to private services. This reliance on the private sector may be due to the average delay of approximately 7 weeks between referral and first appointment date in that country (Cremin and Finn 2002). Casserley-Feeney et al. (2008) reported that around 23% of patients with low back pain have to wait approximately 10 weeks to be seen by physiotherapists in the public sector.

Such delays between referral and treatment may mean more patients reach a chronic stage before their first visit to physiotherapy. During their wait, patients may adopt passive approaches to managing low back pain and limit their normal daily activities, both of which are antithetical to the recommended management strategies in recent guidelines (NICE 2016). Further, that opportunity to entrench questionable coping strategies may increase the challenge physiotherapists face when trying to help patients exchange passive behaviour for more active and adaptive programmes.

Most participants (71.3%) in the current study described the length of a normal physiotherapy session as 30–45 minutes. This finding is consonant with previous studies that have reported an average appointment length of less than an hour (Gracey et al. 2002; Fidvi and May 2010; Oppong-Yeboah and May 2014). In a qualitative study exploring how satisfied patients with musculoskeletal conditions were with out-patient physiotherapy services they had received, patients understood that physiotherapists were in high demand and appreciated that this had not negatively affected their care (Hills and Kitchen 2007). However, patients often do have concerns about long waiting lists and preferences for appointment times.

Most of the physiotherapists participating in this study offered one of two estimates of the number of CLBP patients they treat in an average day. Forty-two percent reported typically seeing one to three CLBP clients, and 40% estimated seeing between three and five. Surveys have shown that physiotherapists in developing countries tend to have more than seven treatment sessions with each low back pain patient (Pensri et al. 2005; Fidvi and May 2010; Oppong-Yeboah and May 2014) , while studies conducted with therapists in developed countries reported an average of less than seven sessions (Jackson 2001; Gracey et al. 2002; Casserley-Feeney et al. 2008). While this difference between developed and developing countries may result from lack of local guidelines and poor adherence to evidence-based practice, it also could be due to the healthcare model adopted in developing countries, which is often based on the biomedical model and promotes more passive approaches that can lead to patient dependency on healthcare services. In developed countries, the biopsychosocial model has been more commonly adopted by healthcare policymakers to enhance healthcare quality because it addresses patients' physical, psychological and social characteristics and needs (Smith 2002; Havelka et al. 2009), This multi-dimensional approach appears to be important, especially in managing chronic conditions such as CLBP, and may help patients adopt self-management methods.

4.6.3 Assessment and treatment goals

Most therapist participants in this study (45.5%) considered pain reduction to be the primary goal in treatment of CLBP. Similarly, physiotherapists in previous studies also have reported decreasing pain as the main goal in low back pain management (van der Valk et al. 1995; Liddle et al. 2009; Oppong-Yeboah and May 2014). It thus seems physiotherapists in both developed and developing countries consider

reducing pain to be the principal treatment outcome. However, healthcare professionals' attitudes and beliefs can influence patient behaviour and perspectives (Darlow et al. 2012), and physiotherapists' view of pain reduction as the essential objective of CLBP treatment may negatively impact patients. If therapists prioritise pain before functionality, patients may perceive that attitude and so fear and avoid activities and treatments not focused on diminishing discomfort. As current evidence and clinical guidelines promote a focus on improving functionality for chronic conditions (Koes et al. 2010; NICE 2016), such a patient-therapist dynamic is unhelpful.

Improving functionality for patients with CLBP was acknowledged as the second most important goal by participants in this study. Several older and more recent studies also have reported function as the second priority after pain management for low back pain (Foster et al. 1999; Liddle et al. 2009; Oppong-Yeboah and May 2014), reflecting a significant amount of literature emphasising the importance of functionality for low back pain patients. However, a study conducted in India revealed that physiotherapists there considered function and pain to be of equal importance (Fidvi and May 2010). Furthermore, physiotherapists in Thailand did not report improved function as among their main treatment goals (Pensri et al. 2005). These differing perspectives suggest there is gap between evidence and guidelines and clinical practice regarding whether improved functionality should be the main goal in treatment of low back pain. This conclusion is further supported by a Swedish study that found both physiotherapists and doctors had a poor understanding of the concept of guidelines for back pain (Overmeer et al. 2005).

It seems logical that the assessment tools physiotherapists in this study reported using are influenced by their prioritisation of pain reduction as the main treatment

goal in CLBP management. Most of the participants ranked the *Visual Analogue Scale for Pain* as the most frequent outcome measure used when treating CLBP patients. This finding was consistent with previous studies that reported physiotherapists' use of reported pain as their key outcome measure (Foster et al. 1999; Copeland et al. 2008). It is interesting that physiotherapists identified exercise and advice as the most frequently employed treatments for patients with CLBP; however, the most frequently used assessment methods were mainly pain focused (70%) rather than functional outcome measures (Liddle et al. 2009).

The preference for use of pain scales may relate to more than just physiotherapists' perceptions and prioritising of treatment goals. Factors such as organization, time, resources, knowledge of alternative outcome measures, and patients' ability to understand outcome measures all could influence therapists' instrumentation selection (Stokes and Stokes 2008; Duncan and Murray 2012). Use of pain outcome measures such as the Visual Analog Scale for Pain or the Numeric Rating Scale for Pain, which rank pain from 1-100 and 1-10 respectively, may be preferred because they are easy for patients and less time-consuming than alternative tools.

Functional outcome measures were reported to be the second most frequently used assessment instruments in the current study. However, the percentages of participants employing specific functional tools varied widely. Some of the measures this study's physiotherapists reported using and the percentages using them were as follows: the Oswestry Low Back Pain Scale (22.5%), the Quebec Back Pain Disability Scale (7.9%), and the Roland Morris Disability Questionnaire (3%). Jette et al. (2009) reported the most common functional outcome measure used by American physiotherapists (41.3%) was the Oswestry Low Back Pain Scale. This instrument may enjoy such popularity because it requires only 5 minutes to complete and

because patients with CLBP served as the test population during instrument development (Roland and Fairbank 2000).

4.6.4 Treatment methods

All participants in this study included exercise in their treatment programmes for patients with CLBP, and most participants (71.3%) identified exercise as the most frequent treatment they used to help their clients manage their condition. Advice followed exercise as the second most common management method (67.3%). These findings are consistent with other studies that have identified exercise and advice as the most used management approaches with CLBP patients (Liddle et al. 2009). Their ubiquity may be due to the considerable evidence backing them and to recent guidelines that promote active approaches for low back pain (NICE 2016).

However, healthcare providers' fidelity to these guidelines is not always strong. A Dutch study that investigated physiotherapists' adherence to guidelines during treatment of low back pain discovered that only about 50% utilized the recommended management approaches (Swinkels et al 2005). Such variance from formal recommendations could be due to lack of awareness and skills, and/or limited time and resources (Da Silva et al. 2015a). UK physiotherapists in one study expressed concern about the applicability of NICE guidelines (2009) for treating low back pain in busy clinical practice because they believed some of the recommendations were unrealistic (Parr and May 2014). These concerns highlight the importance of considering both patients' and healthcare professionals' opinions and beliefs before developing any guidelines for CLBP treatment in the KSA. Acknowledging healthcare providers' perspectives and tailoring guidelines

appropriately may enhance their adherence to recommendations and lead to improved and high quality patient care.

In the current study, passive treatments for CLBP such as electrotherapy and manual therapy were used by 38.6% and 31.7% of the participants, respectively. Use of electrotherapy was commonly reported for treating patients with low back pain in old studies conducted in developed countries (Battle et al.1994; Jette and Delitto1997; Foster et al. 1999), while more recent studies suggest fewer physiotherapists are using modalities to treat low back pain (Casserley-Feeney et al. 2008; Liddle et al. 2009). This change over the last decade may be due to elevated awareness of the importance of teaching evidence-based practices at the training level and increased emphasis on their use by licencing bodies in developed countries (Mcevoy et al. 2016). However, the developing countries of India, Ghana and Thailand still report excessive use of passive treatments. For example, studies have found 60% or more of physiotherapists in these countries preferred using at least one modality for treating patients with low back pain (Pensri et al. 2005; Fidvi and May 2010; Oppong-Yeboah and May 2014).

Several reasons may underlie the high use of modalities in developing countries, including limited teaching of evidence-based practices (especially in initial training), language barriers, and lack of skills and organizational support. A survey conducted in Kuwait to investigate physiotherapists' use of evidence-based information to inform their clinical decisions when treating musculoskeletal conditions showed the primary factor affecting their selection of treatment methods was the training they received while obtaining their entry-level degree (Al-Enezi and May 2017). In Colombia, physiotherapists reported a variety of barriers that limited their ability to use evidence in practice, including lack of research-skill instruction at the

undergraduate level, language barriers, and limited ability to understand statistics and critical appraisal (Ramirez-Velez et al. 2015). These shortcomings underscore the importance of restructuring entry-level physiotherapy programmes in developing countries to include instruction that enhances physiotherapists' understanding of research and critical appraisal. Improved content in educational programmes could ultimately lead to higher quality physiotherapy services because management would be based on recent best evidence.

The most frequent physical agent used to treat patients with CLBP, employed by 69.3% of the physiotherapists in the current study, was hot packs. In addition to hot packs, use of TENS proved popular. On a 1-5 scale evaluating how frequently various modalities were used, almost half of the participants scored TENS as a 5. However, there is lacking or insufficient evidence supporting the effectiveness of modalities such as TENS, interferential therapy, short-wave diathermy and traction for treating chronic low back pain (Airaksinen et al. 2006;Pillastrini et al. 2012). The excessive use of modalities revealed in the current study conflicts with the primary duty of healthcare professionals: providing the best possible care to patients based on evidence. Furthermore, providing these passive treatments may influence patients to adopt more passive approaches and become more dependent on healthcare services. A systematic review reported that healthcare providers' beliefs and attitudes can influence low back pain patients' attitudes and beliefs, including those related to condition management (Darlow et al. 2012). Thus, in the KSA, physiotherapists' selection of CLBP management strategies needs to be based on recent evidence and to promote self-management and an active lifestyle, as recent guidelines for low back pain treatment recommend (NICE 2016).

Promoting evidence-based practice and helping patients adopt self-management need not rely exclusively on undergraduate degree instruction. Disseminating these important ideas also can be accomplished through CPD, which is compulsory for healthcare licence renewal in the KSA. However, most physiotherapists in the current study reported attending CPD training focused on technique. Specifically, 46.5% reported continuing training on the Mulligan technique, 45.5% on the McKenzie technique, and 30.7% on the Maitland technique. Previous studies have reported higher numbers of therapists attending at least one of those training courses rather than other post-qualification training options (Gracey et al. 2002; Pensri et al. 2005). The results of the current study also indicated an association between attending CPD training such as Mulligan or Maitland and subsequent use of these methods during CLBP patient treatment. These findings highlight the importance of introducing evidence-based practice in CPD training to enhance healthcare professionals' understanding and critical appraisal of available therapy techniques (Alsop 1997; Cusick and McCluskey 2000). Improved clinical reasoning and use of best evidence ultimately could lead to improved quality of care.

Finally, most of the current study's participants (77.2%) reported that their organisation did not follow any guidelines for CLBP treatment. This may explain the high number of participating therapists who used passive treatments (61.4%) and their limited use of self-management approaches in daily clinical practice.

Furthermore, only 36.6% of these physiotherapists gave cognitive behaviour therapy a 5 on the 5-point scale assessing the frequency of its use in treatment of patients with CLBP. These and previous outcomes (Houser and Oman 2010) suggest that organizations could play an important role in promoting guidelines and evidence as primary sources of information to frame clinical decisions and could provide access

to information and training that would result in a professional culture that endorses and expects evidence-based practice.

4.7 Conclusion

This study's findings have revealed important aspects of assessment and treatment used by physiotherapists in the KSA. It seems physiotherapists tend to focus more on pain reduction than on improving functionality when treating patients with CLBP. That focus likely influences their decisions regarding outcome measures, as was illustrated by the participants' reliance on pain-focused measures to determine treatment efficacy.

Furthermore, the two most frequently employed therapy methods were exercise and advice, although most of the participants also reported using passive treatments such as hot packs and electrotherapy on a regular basis. This reliance on outdated modes of treatment may be due to lack of awareness or lack of access to standardised guidelines for treating CLBP.

It is obvious lack of adopting guidelines for CLBP treatment in organisations for most participants (77%) in this study. This may explain the limited use of self-management among physiotherapists in the current student.

These conclusions must be considered tentative, however, due to the sampling strategy utilized in this study. Because random sampling was impossible and convenience sampling was used instead, it is important to consider the possibility that the results of this project may not be generalized to the larger population of physiotherapists in the KSA. A new healthcare policy that establishes and updates records on practicing healthcare professionals in the KSA would be of great value.

Such a policy could facilitate future research and enhance the quality of findings. Access to a national database would have enabled random sampling in this study and heightened the generalizability of the findings.

Chapter Five: Qualitative Section -Patients' perceptions of self-management of chronic low back pain in Saudi Arabia

5.1 Introduction

This chapter presents the second study of the current research project. Patients were interviewed at several hospitals to explore their perceptions regarding the physiotherapeutic management of CLBP in general and self-management in particular. The methodology and justification for the research paradigm and qualitative method selection in this study were discussed in detail in Chapter Three. In this chapter, recruitment, sampling, data collection and data analysis will be reported upon and discussed in the context of the current study's findings and the previous literature.

5.2 Aim

The purpose of this second study is to explore patients' perceptions in regarding to physiotherapy management of CLBP, specifically through self-management. Achieving this aim has helped to identify patients' expectations, preferences and understanding of physiotherapeutic management for CLBP, including self-management in the KSA.

5.3 Research question

What are patients' perceptions of CLBP self-management in the KSA?

5.4 Method

5.4.1 Study design

A qualitative method using semi-structured interviews was conducted and framework analysis was employed to analysis data in this study. Sixteen semi-structured

interviews were conducted with patients with CLBP diagnoses. All patient interviews were conducted during the period ranging between April and May 2016 in Jeddah, KSA. Participants were recruited from out-patient physiotherapy departments at two hospitals (private and public) and two physiotherapy clinics.

5.4.2 Sampling and Recruitment

Purposive sampling was utilized for patient recruitment to ensure participants came from various backgrounds and had a variety of demographic characteristics and experiences. For example, patients were selected according to their age, gender, education, occupation, occupational status, social status, language and CLBP episode.

Invitation letters were sent to outpatient physiotherapy departments and physiotherapy clinics in Jeddah. The invitation letter, with the Sheffield Hallam University logo and the signature of the director of the study, explained briefly that it was an initial invitation for participation in the study. The letter requested permission to recruit participants from the organisation.

The head of the physiotherapy department or senior therapist played a major role in the recruitment process by circulating the invitation letter to all therapists and ensuring that all therapists were aware of the study. The therapists invited patients who suffered from CLBP to participate in the study during their first physiotherapy appointment. The therapist provided patients with an invitation letter briefly explaining the purpose of the study in both Arabic and English. If the patients showed any interest in the study, the therapist provided them with an information sheet, consent form and registration form (See Appendix 3.1). Patients were advised

to read the information sheet at home and, if they had any questions, to contact the researcher by email or mobile before filling in the registration form.

Patients were given a week before the therapist asked them if they wanted to participate in the study. Potential participants who showed interest in participating or needed more information filled in the registration form. This included patients' name, age, gender and stage of LBP (3 months and above), occupation/occupational status, social status and preferred contact method. The registration form gave the researcher the ability to assess potential participants eligible to participate in this study based on inclusion and exclusion criteria (Table 13).

It was clearly stated on the information sheet and the consent form that participation was voluntary, meaning that participation or non-participation in the current study would not affect patients' care negatively or positively. This was to ensure participants' right to accept or reject participation in this study is transparent.

Moreover, patients had the right to withdraw from the study at any time, even after giving consent and starting the interview. Participants' written consent was taken by the researcher before the interview; to ensure participants had read and understood the information sheet and consent form.

The researcher contacted the participants and chose the most convenient place and time for participants to have the interview. To ensure the recruitment process was culturally sensitive, female participants were interviewed with a family member in attendance. The KSA is a conservative society, and men and women are only allowed to mix under certain circumstances (Al-shahri 2002).

In the current qualitative study, data collection (patient interviews) continued until the data reached saturation level (May 2001; Strauss and Corbin 2008), which means

that during the analysis no new themes were extracted. So data collection and data analysis was done side-by-side and once it was thought that no new themes were emerging then two more interviews were done to confirm this.

Table 13. Inclusion and exclusion criteria

Patient inclusion criteria	Patient exclusion criteria
Participants have CLBP as diagnosed. Participants are 18 years or older. Participants are volunteers.	Individuals who cannot communicate in either Arabic or English. Patients who have experienced recent accidents, spinal surgeries or have suffered from serious medical conditions. Patients who have been treated by the researcher. Patients who cannot give consent.

5.4.3 Semi-structured interview procedure

A topic guide was used during the semi-structured interviews (see Appendix 5). This topic guide was developed after conducting a review of the relevant literature and incorporated the findings of the quantitative section. Using semi-structured interviews and a topic guide allowed the researcher to cover all of the questions in the guide in a flexible manner to ensure all patients discussed the same questions.

The topic guide consist of four dimensions; Expectation, Treatment, Self-management and Satisfaction. The purpose of dividing the topic guide into dimensions was to help the researcher focus and monitor achieving the main aim of the current study as reported in the previous section (5.2 Aim). The researcher started with general questions, such as "Could you please tell me about your LBP" to encourage and empower patients to talk about and discuss their problem.

Four pilot interviews were conducted before the main qualitative study. The advantage of using pilot interviews is the ability to test and adjust topic guides based

on participants' responses and understanding (Van Teijlingen and Hundley 2002). Moreover, using this approach helped the researcher to plan and estimate the time required to accomplish data collection and analysis.

Sixteen semi-structured interviews were conducted with fifteen male participants and one female participant. Patients were given the option to select between Arabic and English for the interview. Fourteen interviews were conducted in Arabic and only two in English. All interviews were conducted in the hospital meeting room or quiet room to protect patients' privacy. On average, the interviews lasted about 20 minutes.

All interviews were recorded using an electronic audio recorder and directly transferred to a password-protected laptop. Each interview (voice file) was given a code (number) to protect participants' identities. Participants' demographic information and voice file code numbers were saved in a Word document protected with a password.

5.5 Data analysis

The data analysis began early in the process of data collection, and ATLAS.ti 7 software was used for data management (Friese 2012). A framework analysis was used in this study (Ritchie and Spencer 2002). Further discussion of selecting framework analysis and ATLAS.ti was provided in Chapter Three.

Data analysis was conducted in the original language of transcription, which was either Arabic or English. The final results were only translated into English by two researchers to ensure the researcher was working with text that closely resembled the original transcript and to minimize the data lost in analysis due to translation difficulties. Moreover, an independent bilingual researcher was allocated to review

the translation process. Additional discussion about the translation process was also provided in Chapter Three.

5.6 Result

Fifty two patients with a diagnosis of CLBP were invited (29 male; 23 Female) to participate in this study. Twenty three patients agreed to participate, however, data reached saturation level after thirteen interviews. Researcher decided to conduct another three more interviews to ensure data had reached saturation level.

Over all sixteen participants were interviewed individually (see Table 14). Demographic information of the participants shows that patients have various characteristics in term of Age, social status, education, occupation and CLPB duration. However, an imbalance between males and females was clear; only one female participant agreed to participate in this study. That may be because of cultural reasons, especially as female patients are treated by female physiotherapists in KSA.

5.7. Research findings

This section reports the main findings of the semi-structured interviews conducted with CLBP patients. Participants were interviewed to explore their perception of the physiotherapeutic management of CLBP and the self-management approach in the KSA. The results were presented in terms of themes and sub-themes (See Figure 3).

The following main themes emerged from the interviews:

Patient expectations and satisfaction

Patient behaviour regarding CLBP

Patient awareness and understanding

Personal and environmental factors

The impact of low back pain on people's lives

Table 14. Demographic information

Age	Social status	Education level	Occupation	CLBP duration
24	single	Bachelor	Student (Physiotherapy)	8 Months
31	Married	Diploma	Physiotherapist assistance	2 years
38	Married	Bachelor	Policeman	6 months
60	Married	Master	Retired	4 Years
40	Married	High School	Driver	1 Year
67	Married	Master	Retired (Manger)	3 Years
45	Married	Bachelor	Engineer	8 years
37	Married	Bachelor	salesman	3 Months
29	single	Bachelor	customer service	1 years
38	Married	Bachelor	Engineer	6 months
22	single	Bachelor	Student	2.5 years
47	Married	Bachelor	Housewife	1 year
42	Married	Diploma	Allied health professions	3 years
34	single	High School	Delivery driver	9 years
38	Married	Bachelor	sales supervisor	8 Years
70	Married	Primary School	Tailor	4 years

5.7.1 Theme: Patient's expectations and satisfaction

Participants expressed their expectations, needs and satisfaction in regard to physiotherapeutic management and self-management on many occasions in the current study. Patient expectations and satisfaction themes included multidimensional sub-themes, such as physiotherapists' attitudes, progress, treatment, effective communication, patients' education levels and care after discharge.

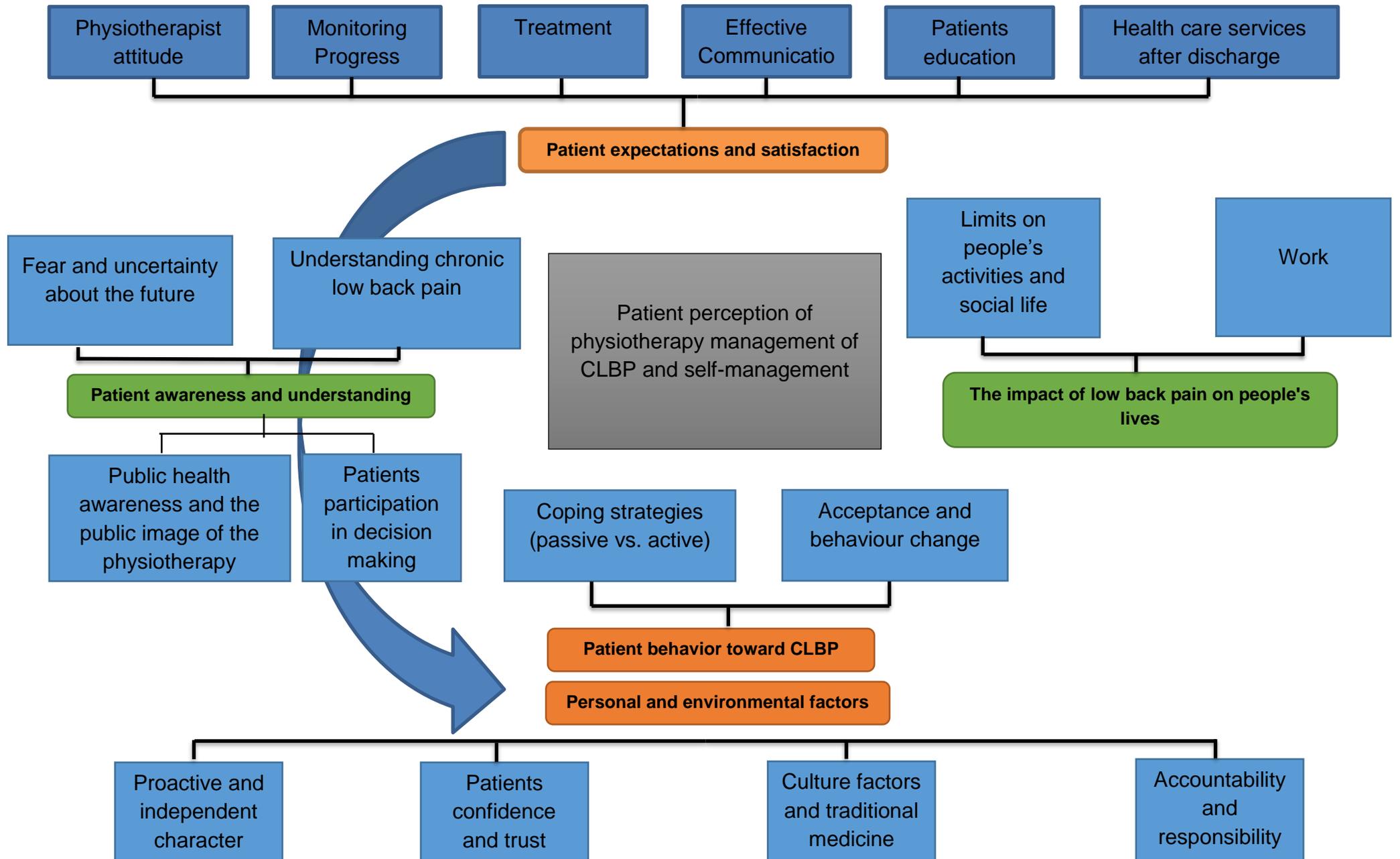


Figure 3. Themed and subthemes patients' perceptions of physiotherapy management of CLBP and self-management.

5.7.1.1 Subtheme-Physiotherapist attitudes

The majority of participants highlighted the importance of maintaining a good relationship with their physiotherapist, with the main factor in achieving that being the physiotherapist's attitude. Physiotherapists' personal skills and their ability to deal with patients and break the barrier between themselves and patients were emphasized by many patients.

The physiotherapist must be friendly at all times; if a patient comes with a chronic problem, and the physiotherapist is friendly, the patient will come regularly to seek his services. (P2.1)

The physiotherapist treated me very well and gave me his personal mobile number, so I can contact him at any time if I need him. (P3.1, 1)

You do not feel like it is a relationship between a doctor and a patient; it's like a relationship between two friends. The physiotherapist removes any psychological barrier between you and him... (P4.1-2)

The participants considered good character and a caring attitude to be factors that may influence patients' satisfaction with physiotherapy treatment. Patients discussed the importance of physiotherapists' caring character and the impact that may have on building trust and confidence in patients.

Doctors sometimes don't care about your pain. I have pain, and I feel that the physiotherapist cares more about his employment and his salary than he cares about my pain. This bothers me. (P1.2)

He helped me, personally -- not much, but he helped me some, and he gave me good support'. (P4.2)

5.7.1.2 Subtheme-Monitoring progress

Participants acknowledged the role of physiotherapy in helping them to manage CLBP. Some patients considered progress to be a sign of successful physiotherapy management. Moreover, participants believed that good physiotherapy management could motivate and build confidence, which may then help them to self-manage CLBP in their daily lives.

If I don't have relief from physiotherapy, I will go to another person. (P1.4)

After a physiotherapy session, the first thing I will do is monitor for any changes in my condition. If I feel there is an improvement because of my session with the physiotherapist, I will go home and follow the advice he gave me during the session. (P1.1)

However, not all participants had a positive experience with CLBP progress. Patients' attitudes and behaviours toward CLBP varied and patients expressed their expectations of and satisfaction with physiotherapy in different ways. For example, some participants were passive and blamed their physiotherapists for their lack of improvement because he or she only used certain physiotherapy approaches during their sessions. Other participants believed they were sharing responsibility with their physiotherapists and cited the importance of self-awareness and self-management.

I have had physiotherapy before, but it did not benefit me. They gave me electrotherapy, massages and other stuff, but all of this helped me for only a short period of time... (P2.4)

I feel good because I'm getting better. Not much, and not only because of physiotherapy, but because I'm joining the gym and I'm going swimming. I'm doing

exercise also; I'm taking steam baths, and I started changing my diet. In the morning I have breakfast, and at night I'm now taking light -- I'm taking fruit only. This is what I'm doing. (P4.2)

5.7.1.3 Subtheme-Treatment

The majority of participants reported their expectations of or satisfaction with the physiotherapy treatment method. The dominant treatment approach is a passive treatment method that utilizes both modalities and manual therapy. Meeting participants' expectations in terms of treatment method was a main indicator of patient satisfaction on multiple occasions, as reported by the participants.

It makes all the difference when you use TENS or an ultrasound to relieve deep pain. That will make you feel comfortable for a day. I mean, that might make you better for a week if you attend all the treatment sessions. However, I couldn't attend all of them; it was impossible. (P2.1)

I did not expect physiotherapy to be like this. I expected it to be better than this. I mean, when I visited my physician and told him about the physiotherapy treatment that I received in the physiotherapy department, he was surprised for a short period of time then told me that I should receive more treatment ... I mean, besides the electrotherapy and hot pack that I had in the session, they should give me massages and cream to reduce muscle spasms... (P2.2)

However, some participants recognized the importance of exercise and expressed interest in being treated with an active approach or a mixed approach including both active and passive components. It seems that many participants with previous experience with physiotherapy understood and expected a more active approach to

treatment, such as exercise. Their personal experience with different treatment approaches maybe what led them to this conclusion.

I think they should include exercises on machines and also massages using therapeutic gel and cream. The physiotherapist here, may Allah bless him, guided me and asked me to do various exercises and stood beside me and corrected me... (P5.2)

I have had physiotherapy before, but it was in water (hydrotherapy). I'm not sure about it, but I thought that this was physiotherapy. I thought I would do exercises and they might put some weight on my leg. I thought that my problem was in my leg and not in my back. (P6.2)

5.7.1.4 Subtheme-Effective communication

Communication between patients, physiotherapists and health care professionals in general seems to be limited. Participants showed some level of disappointment with regard to patterns and levels of communication with health care professionals. Some patients appreciated their personal communication with their therapists, but also believed some therapists did not provide them with enough information about their conditions.

It is very important because the person is sick. But if the doctor communicates with you nicely and is kind with patients -- getting mentally something (better). (P4.2)

In general, communication is good except with regard to my condition (CLBP); we don't talk about it. I mean, it is ok for them to laugh and chat about different topics with you; all the physiotherapists here are good, and they smile a lot. But I said from

the beginning, patients are not provided with enough information about their condition. (P1.1)

Participants reported some difficulty during communications with their physiotherapists. The main factor cited was that physiotherapists should talk with people based on their level of understanding. Some participants described the way that physiotherapists communicated with them as resembling a professor talking to his or her student. The patients appreciated physiotherapists who used the right words and easy-to-understand language.

I feel like a student sitting with his professor. He speaks a language I cannot understand very quickly ... I mean, he is unable to deliver information in simplistic language ... he should talk to me with language that I can understand. (P2.4, 2)

A communication barrier was identified; however, the communication barrier was only reported by patients with a lower education level and a limited ability to communicate in another language. Participants relied on family members who were able to communicate in English to overcome this problem, though doing so may have had a negative impact on these patients' ability to be independent and practice self-management.

Yes, because he was from C (country), his language was not clear. He did not speak Arabic ... sometimes I have to bring M (participant's son) who can understand English. So, the physiotherapist explains to him (participant's son) what sort of exercises to do... (P4.4)

5.7.1.5 Subtheme-Patient education

Participants expressed interest in receiving more information about CLBP from physiotherapists. Adequate information regarding the condition and anatomy of CLBP could motivate patients to learn more about their condition and encourage them to discuss and share responsibility for their health and wellbeing. Furthermore, fear was linked to a lack of information about CLBP on the part of participants, taking the form of, for example, incorrect assumptions about CLBP's progress and fear of the future.

First of all, the physiotherapist should explain to patients his condition (CLBP) and how he can manage his condition. The patient should have some information about his condition, and it is not sufficient to use only a hot pack without telling him what you are doing. (P 2.1-2)

I do not think that the knowledge about the condition reaches the patients. How many types of chronic low back pain? More than 700. I think if the physiotherapist gives patients more information, even some anatomy, that will help the patient to understand his condition. For example, my mum has chronic low back pain and she is worried about becoming paralyzed. (P1.1-1)

Providing participants with both verbal and written advice was appreciated. An advisory or education leaflet was provided by physiotherapists that included information on exercise, posture and lifting heavy objects. Moreover, participants suggested using a mobile app to share exercise videos because they then become easy to access, reducing the probability of losing the educational material.

I have suggested digitizing exercise instructions and sending them to patients via WhatsApp ... so instead of giving him a leaflet, which might end up lost, I think the patient would use his mobile and watch 1 or 2 minutes of video. (P 2.1-1)

5.7.1.6 Subtheme-Health care services after discharge

The type and scope of care expected after discharge varied. Some participants wanted to have the opportunity to revisit physiotherapy from time to time for follow-up. Other participants preferred to visit a physician to check if they needed more physiotherapy sessions. It seems that patients needed some sort of reassurance and support from a health care professional to guide them after discharge.

If a patient can visit physiotherapy clinic, they will give him an appointment every 2-3 weeks. The physiotherapist will assess you and give you a home program that you should follow for 10 days, then you visit them again for a follow-up and to check your progress. (P2.4)

I prefer to visit my doctor; if he decides I should have more physiotherapy, then I will go. (P4.4)

I prefer to go back to physiotherapy or to use medication. (P5.2)

5.7.2 Theme: Patient behaviour regarding CLBP

5.7.2.1 Subtheme-Coping strategies (passive vs. active)

Patients have adopted different strategies and methods to cope with CLBP. The use of medication was widespread among the participants. Many participants preferred using medication or physiotherapy (modalities) to manage CLBP. Moreover, some

participants believed that medication was more effective than physiotherapy in reducing pain.

Of course I use R (painkiller) a lot when having this pain (CLBP). After multiple sessions, I feel better; however, within the last two hours, I felt the effect of R was stronger than the physiotherapy session. I believe that if I stop taking this medication, the pain might increase. (P1.2)

Sometimes I visit the doctor or use medication. If the pain starts while at home, often I will lay down on my back and try to raise my leg to manage (this pain). (P5.2)

The main discussion with regard to coping with CLBP was focused on pain. Few participants reported an active coping method for pain. The main active method was exercise and posture correction. Participant who accepted active approach even believed that their CLBP was the main reason they had adopted healthier lifestyles and regular, routine exercise. These patients believed that performing exercise helped them to manage CLBP.

I have some precautions I have to take: I have to correct my positions, do some exercises, and change my daily living activities. (P1.4)

There are advantages and disadvantages to having CLBP. I'm exercising more now on a regular basis and the pain decreases after I perform the exercises. (P1.1)

5.7.2.2 Subtheme-Acceptance and behaviour changes

Many participants showed a good level of understanding regarding the importance of changing their lifestyles and adopting new behaviours to help manage CLBP. The main element that patients cited was the necessity of adopting an active lifestyle. That included ensuring they were engaging in normal daily activity regardless of the

pain, as well as following their physiotherapists' advice on posture correction, lifting and exercise.

I think that people must go for the -- they must change their lifestyle. They must do things like this: swimming, steam baths, making their bones stronger and making their muscles stronger. (P4.2)

I should adapt myself to this condition (CLBP); if I did not adapt to it, then I will not be able to do anything in my life. This does not mean that I must lay down on the bed and do nothing about it... (P2.1)

We know that sitting down for a long period of time is wrong, and so is avoiding doing any exercises. (P2.4, 1)

However, not all of the participants managed to successfully change their behaviour and follow their physiotherapists' advice. Due to social and work obligations, patients sometimes felt a loss of control to incorporate these behaviours and were not able to follow advice. However, participants still accepted the reality that they must change their behaviour to achieve the goal of managing CLBP.

Sometimes while I'm driving from F (city), I have to stop and get out of the car. So, I do not have to sit for long periods of time. I'm trying to follow the physiotherapist's advice and change my sitting position. They give me specific advice and I'm trying to follow it. (P3-1)

Faith and belief in Allah (God) was reported as a source of inspiration in accepting their condition. Participants used spiritual activities, such as praying, to motivate them, even during the performance of exercise

We have to accept it -- we have to accept (the CLBP problem). We should say Alhamdulillah (thank God) ... as a believer, I should say Alhamdulillah (thank God); never lose hope and just ask him to help you get well very soon ... even when performing exercises at home, I do not say 1, 2, 3 but say SubhanAllah and Alhamdulillah (prayers) 10, 10, 30, 30 ... and keep saying these good prayers. (6.1, 3-4)

5.7.3 Theme: Patient awareness and understanding

5.7.3.1 Subtheme-Fear and uncertainty about the future

Participants expressed a fear of decline due to their condition. The common factor was a fear of spinal surgery. Some participants seemed unsure about the effectiveness of physiotherapy in the treatment of CLBP. However, other participants believed that physiotherapy could help them to treat CLBP. Both groups preferred physiotherapy to surgery because they were not sure about the surgery's rate of success or side effects.

I have no fears about any health professional or treatment except for surgery. Even if the doctor told me I do not have a choice, I would not have surgery. I refused to do the surgery for eight and a half years because I know that it (surgery) has a temporary effect and no long-term benefits; my condition would collapse again. (P1.2-1, 2)

I expected that I would need to go through back surgery or something similar. But I said I do not want to have the surgery. (P6.1)

I thought I would go to physiotherapy as my pain was around 90%. I wanted to try physiotherapy first to avoid surgery, but I would end up doing the surgery if physiotherapy did not help me. (P3.4-2)

Some participants were motivated to use self-management at home. But their main concern was that they were not confident they could be successful. That may be one of the reasons that participants tended to prefer attending physiotherapy sessions, compared to utilizing a self-management approach at home. Patients' circumstances, including experiential knowledge and social context, may influence their adoption of self-management, irrespective of their perceptions of their ability to accomplish a particular task that is part of their self-management strategy, such as performing exercise and changing posture.

In the beginning, I tried to do it (self-management) myself but I felt I could not do it. Because of that, I came to this hospital as it has a good reputation ... I'm trying to use self-management as much as I can, but if I cannot or if it doesn't work, then I will go back to physiotherapy. (P3.1)

5.7.3.2 Subtheme-Public health awareness and the public image of the physiotherapy profession

This subtheme has two aspects in terms of participants' knowledge and understanding regarding general health awareness and public perceptions of physiotherapy. Participants recognized there is insufficient understanding of physiotherapeutic roles and responsibilities. The existence of some stereotypes was reported, such as the notion that physiotherapy is massage and the view that physiotherapy is only an extra, secondary treatment. There were also misconceptions regarding physiotherapy's roles in treating various conditions.

Moreover, the cost of physiotherapy sessions seemed to have a negative effect on participants trust.

Society has negative ideas about physiotherapy services, but after I came here my perception changed; I like it ... the negative idea was that ... the main goal of many hospitals is to gain more money regardless of the treatment (treatment quality).

However, after I came to A (hospital name) hospital, the reality was different; the guys (physiotherapists) have good experience and they are not concerned about money. (P3.1, 1-2)

Most people come to physiotherapy expecting it to be all about massage... (P2.1-3)

We as patients do not have adequate awareness of physiotherapy services; it is difficult to believe that physiotherapy is the main solution to my problem. This was my impression, as I believed that physiotherapy might or might not help me. (P1.1,2)

Health awareness was the other dimension that participants identified as an important one to empower people and help them obtain control over their lives.

Promoting a healthy lifestyle in advance in school, media and social media may be helpful, as the participants suggested.

Sure, there is awareness in the media and in schools. I'm not sure about the newspaper, as not all people read it these days; social media is more frequently used... (P6.2)

5.7.3.3 Subtheme-Understanding chronic low back pain

Many participants recognized the cause of their LBP. Based on patients' various responses, the causes of LBP included incorrect posture, suffering falls and obesity.

However, the lack of a clear and accurate diagnosis was also reported. Some

patients were confused concerning the source of pain with regard to LBP symptoms, such as in the case of radiating pain to the leg.

The main reason (cause of CLBP) for my problem is that my father had a stroke and he had to have an x-ray image after he fell down. I lifted him on my shoulder -- my father is around 100(kg) -- and in the following three days I couldn't get out of bed.
(P2.1)

I have weakness in my leg and pain in my lower back. Then I slipped and fell down and the physical medicine doctor referred me to a neurologist. The neurologist said I have osteoarthritis and a prolapsed disc, but it is not 100% prolapsed. However, we visited another neurologist and he said I have osteoarthritis but I don't have a prolapsed disc and, instead, thinks the disc has pressed a little on my spinal cord...
(P6.1)

The importance of following a healthier lifestyle was also cited by patients. Issues such as obesity that result in an unhealthy lifestyle were considered key factors that could increase the risk of developing LBP. Understanding causes and risks helped some participants to adopt healthier lifestyles, such as by incorporating sports. Moreover, participants who understood the risk factor that could cause or aggravate pain tended to avoid that behaviour or activity.

After age forty, people tend to neglect themselves. I did not have any pain before, but I have had it now for the last seven or eight years, especially because of my obesity ... 67-130 kg. I think obesity is a major factor (cause). (P4.1)

Sitting for a long period of time, wrong posture and lack of physical exercise (P2.4, 2)

5.7.3.4 Subtheme-Patient participation in decision making

Participants have been divided into two groups: those in favour of participating in decision making and those who were against participating in decision making. The majority of patients preferred to leave decisions in the hands of physiotherapists. These patients appeared to be more dependent on their physiotherapists than being prepared to take an active role in decision-making and adopt components of self-management, such as performing exercise. This may have been due to the influence of social and cultural aspects, in that performing regular exercise is not usually part of an individual lifestyle.

I cannot tell him what to do ... he should decide ... he has experience and he knows better than me; I cannot tell him to do this and not to do that. (P4.1, 1)

He (physiotherapist) is the expert ... don't let the physiotherapist do everything... yes, he is the one who has the diagnosis and who does the program; for me, he is the one (P 1.4, 1-2)

Some participants showed a lack of confidence with regard to participating in decision making. It seems that limited understanding and information about their conditions and treatment procedures comprised an important element of completely delegating decision making to a physiotherapist and declining to participate in the process.

I did not understand it (treatment method); if I understood it, then I would not have ended up here ... he (physiotherapist) knows better than me ... this is his profession. (P 5.1)

I have to be patient if he (physiotherapist) says to do this and not to do that ... I do not know; I only do what I know. If you ask me about management (participant's profession), then I know what I am talking about, but there are technical things (treatment method) they know better than me because they studied it and that is their area of expertise... (P6.1)

Few participants demonstrated a positive attitude toward participating with a physiotherapist in decision making. Some patients believed it was not appropriate to be involved in making decisions on clinical aspects, except if they had received a particular treatment in the past; then, they might have suggested that treatment to their physiotherapist. Moreover, patients' ability to perform exercise was discussed with physiotherapists, depending on the severity of their conditions.

I was not involved (participating in decision making) in the clinical side of it. But if I had a particular previous experience in therapy, I might suggest something. (P2.2)

Usually, I do not discuss it with him (physiotherapist). He told me to do the exercise, but I told him I cannot do it now. The pain is still severe, and I cannot do the exercise; I did it last time but the pain was absent. I cannot do it now, but maybe later. (P3.2)

5.7.4 Theme: Personal and environmental factors

5.7.4.1 Subtheme-Proactive and independent character

Participants showed an understanding of the importance of being independent and able to self-manage outside of the physiotherapy clinic. The level and scope of this understanding varied among the participants, however. Some participants had proactive characteristics and were trying to take control of their lives through

activities such as adopting an active lifestyle, performing exercise and requesting a home program from their physiotherapist, along with a demonstration to ensure they were performing the exercise correctly.

If I am feeling better -- from this I learned my lesson. If I feel better, I would continue my regimen; I'm not leaving this thing ... but, no, they offered nothing. I discovered my treatment myself. (P4.2)

I do exercises at home like walk in a large hall and use a stationary bike ... it is something that I thought about myself. (P5.2)

I do exercises at home like walk in a large hall and use a stationary bike ... it is from myself. (P4.4)

Using the Internet as a tool to learn more about conditions and treatments was also reported. Moreover, participants compared the exercises they had been prescribed by their physiotherapist with what was available online.

Yes, I saw it on the internet and they gave it to me here (physiotherapy department). I told them I did it at home and even used the stationary bike I have at home. (P6.1)

Participants had different perceptions regarding the meaning of independence. This variation became clear given their differing interpretations about the role of self-management. For example, a group of participants preferred sharing responsibility with their physiotherapist and only needed a minimal level of support and advice. They believed that a physiotherapy session was not adequate to comprehensively treat their CLBP. However, those participants acknowledged the importance of the physiotherapist's role in providing them with information and management skills that enabled them to manage their CLBP in daily life.

If they're (patients) doing some exercises and if they cannot make it here (physiotherapy clinic), they must tell me, "Go for a run." Like, he told me, "Go for a walk. Go swimming. Don't use the treadmill. You cannot do all of this in half an hour session; you cannot do it." They will tell me. They must. They should tell me how to lessen my pain. (P4.2, 1)

If I have the experience, actually I should have the experience in this topic (self-management). But first I should visit the doctor and know what I should do and shouldn't do ... I stopped visiting the doctor (P3.4, 1)

However, not all of the participants tended toward self-management. This could be the case for many reasons, such as a lack of confidence that might have encouraged them to manage themselves without attending physiotherapy sessions on a regular basis. Moreover, pain severity and duration were reported as elements that might limit self-management. Furthermore, severe pain leads patients to seek the assistance of health care professional by going to the hospital.

If I can do it (self-management) at home, then I can't see why not. But if I felt I had to go back (to hospital), I would go back again. (P3.2)

If the pain returns again and is more than before or is the same (level), I might go back (to physiotherapy). But if it is present then disappears (pain), I don't think so. (P2.4, 2)

5.7.4.2 Subtheme-Patient confidence and trust

This subtheme has elements in common with the previous subtheme of patient participation in decision making. These shared elements included participants' self-confidence in participating in decision making regarding CLBP management.

However, patients reported multiple aspects that could influence their trust and confidence, such as their trust in a health care professional's knowledge, the existence of an accurate diagnosis, fear, health care provider behaviour and their own attitude and educational background.

Trust seems to influence participants in different ways. For example, participants who trusted their physiotherapists tended to adopt a more passive approach in terms of involving themselves in decision making. However, patients' trust in their physiotherapists' professional knowledge had an impact on their acceptance of the advice, including on adopting and changing behaviours and selecting exercises.

Whatever they ask me to do I will do ... they know what is best for me, and I will do it. (P4.4, 1)

You cannot diagnosis yourself. They are qualified; I cannot do things by myself. Look at me right now -- this is because I did things by myself. I became committed to their advice... (P6.2)

Patient education could also influence their behaviour by encouraging them to participate in decision making and selecting a CLBP management method. For instance, participants who studied massage therapy preferred a more passive treatment method.

I preferred to participate (in the decision) because I had experience in this field. Yes, it is what I study and I have great experience in all massage methods, such as deep, superficial and friction. (P5.2)

5.7.4.3 Subtheme-Cultural factors and traditional medicine

It was obvious that culture influenced participants' preferences with regard to selecting a particular treatment. Traditional (alternative) medicine was discussed frequently by patients, though the scope of traditional medicine practice was not clearly defined. However, several aspects of traditional medicine were reported, such as acupuncture, massage, herbal medicine, cupping and Hijama (wet cupping). Some participants believed in and already utilized at least one type of alternative medicine. It seems that visiting traditional medicine specialists was result after patients lost hope in conventional medicine, especially after long periods, such as one or two years. Moreover, society contributed to encouraging patients to visit alternative medicine practitioners.

I told my son it had been almost two years (since diagnosed with CLBP) and that I was going to try traditional (alternative) medicine, so we travelled to M (city). Then I continued the physiotherapy and, after that, visited a massage centre on S Street... (P6.1)

I told you that there are better treatment methods, (such as) herbal medicines and natural or wet cupping. (P 2.2)

They (friends and family) told me about traditional medicine. They sent me to a person who does traditional medicine. They asked me if I had ever had surgery (back surgery) and asked me to bring the x-ray image. Traditional medicine is considered physiotherapy, where he does physiotherapy with cream (massage with cream). (P3.2)

However, not all participants supported and believed in traditional medicine. Some participants described traditional medicine practitioners as people who lacked essential knowledge on areas such as human anatomy and neurology. Moreover, the safety of traditional medical treatment was also questioned. For example, the participants were not sure if the traditional medicine practitioner was qualified or had adequate knowledge and experience to practice in a healthy and safe manner.

You mean, traditional medicine? ... no, I do not believe in this (traditional medicine). They do not understand anatomy, muscle tests, or neuroanatomy. He is practicing without any qualification and he only understands some area he learned. He probably puts pressure (by his hand) on a particular area, but that might damage something in your back. (P2.1)

They told me about it (traditional medicine); you know we are Arabs, and they told me about Hijama (wet cupping), cupping and many other things, but I refuse it all. (P6.2, 2)

5.7.4.4 Subtheme-Accountability and responsibility

Several participants believed that they should share responsibility with their physiotherapist for managing their CLBP, including practicing correct posture, lifting heavy items and following their physiotherapist's advice. It seems that positive progress with regard to CLBP enhanced participants' feeling of responsibility, especially after following their physiotherapists' advice and fulfilling their expectations of progress.

They told me, 'Do not lift heavy stuff', but I said no and I lifted (continue to lift heavy things) through pregnancy, continued going up and down, and worked. I was ignorant about the things that harm my body. (P6.2, 1)

I took advice from my therapists and doctors and received good results which helped me to avoid medications. I always follow their advice (therapists and doctors) and when I follow their advice, I feel better. I do not feel pain for a long period of time. But sometimes a lack of self-awareness returns and bad habits lead to pain. (P1.1, 2)

Participants showed an awareness of sharing responsibility with health care professionals to achieve comprehensive CLBP management. However, social and work commitments could have a negative impact on patients' adherence to physiotherapists' advice and home programs.

At home it is ok, but at work, because of the nature of the work, sometimes I ended up doing things to finish the task even if that led to lifting stuff using an incorrect posture. It is difficult to bend my knee and hold and carry stuff from the ground. This is because I need to do it very quickly even if it might cause me injury. (P2.4)

5.7.5 Theme: The impact of low back pain on people's lives

5.7.5.1 Subtheme-Limits on people's activities and social life

Participants agreed that CLBP had a negative impact on their ability to perform the regular physical activities they engaged in before their LBP diagnosis. Moreover, patients' social lives were negatively impacted by CLBP and as a result, they felt that they were losing power and control over their lives. For example, participants reported that normal activities, such as lifting a child from the ground, standing for a

long time or cooking at home, could be considered a challenge for them. This feedback shows that patients' confidence was damaged due to CLBP.

Numbness prevents me from doing things that I usually do. For example, I play football and I consider myself a person who loves adventure and likes to be involved in different activities. Unfortunately, now if the ball is thrown (in a high place), I cannot reach it. I feel I became old ... it is bothering me even in my work and with my children; I cannot hold and lift my children, my daughter...(P2.1,1-2)

My condition (CLBP) has continued to affect me for the last one and a half years. To reduce the pain, I was careful with my sitting and movement, and I did not lift heavy stuff. The pain decreased for one, two and three years and I forgot it, (but) the pain returned unexpectedly due to an incorrect movement. An aggressive and incorrect movement when standing could aggravate the pain again. (P1.2)

It was obvious that CLBP had negatively influenced participants' life to different levels. However, the participants' behaviour concerning CLBP varied. The first group seemed to accept the reality and try to adopt a new lifestyle and change their behaviour. Those patients tended to adopt active lifestyles. However, walking for a long distance might aggravate the pain, so instead of giving up walking, these patients preferred to break long walks up by walking for a short distance and sitting, and then continuing their walks.

I cannot walk for a long distance because of it (CLBP); I have to stop every 200-300m and sit down. I have a portable chair, and I always carry it with me in my hand, so I walk for a short distance and then I sit. (P4.1)

As I told you, I lose balance sometimes, but I still walk little by little even without a stick (walking stick). I can walk little by little, but I stop and stabilize myself and stand as much as I can... (P4.4)

However, not all participants showed the same behaviour (an active approach) in dealing with CLBP. It was reported that pre-existing pain might have limited or prevented patients from participating in physical and social daily activities.

When the pain is present, I cannot move; it is almost as if I am completely paralyzed. (P3.4)

5.7.5.2 Subtheme-Work

Patients expressed concern about the negative impact of CLBP on their work situation. Participants' ability to perform their duties and meet their responsibilities at work was discussed frequently. Moreover, patients feared peer judgment if they showed any signs of weakness. For example, one patient who worked as an engineer was required to travel long distances between locations as part of the job. Because CLBP had negatively affected his ability and performance in the job, however, the patient felt unwelcome and judged by some of his colleagues because of reduction in his ability to achieve job tasks. Furthermore, fear of missing work was reported.

I am unable to stand to do something or to serve a customer. (P4.4)

It disturbs me a lot in my work. I cannot perform my duties at work as I'm supposed to... (P5.2)

As an engineer, I am expected to be involved in a lot of activity and movement. I have to mentor in different locations that are far from each other and I cannot do it.

Another matter is that to get out of the car, I need a minute to sit before walking.

See, my engineer colleagues do not find this acceptable. (P1.2)

5.8 Discussion

In this section, the results of the present study are compared with those in the literature to highlight new findings that surfaced from the data or to confirm previous results regarding CLBP patients' perceptions of self-management. Themes that emerged in this study have been categorised and are addressed in three main sections of the discussion: patient expectations and satisfaction, the impact of CLBP on patients' lives, and factors that may help or prevent CLBP patients from adopting self-management strategies.

5.8.1 Patient Expectations and Satisfaction

The importance of physiotherapists' attitudes toward trust and the patient-therapist relationship has been discussed in this study. Patients expected physiotherapists to have good professionalism and personal character for example; they were friendly, caring and trustworthy. In a review of qualitative studies that explored patients' satisfaction with management of back pain, May (2001) reported that physiotherapists' personal and professional manner, such as whether they were friendly, caring, and listened to patients, influenced patient satisfaction. Similarly, in the current study, patients believed their physiotherapists' attitudes could influence their satisfaction and help them build confidence and trust in the therapeutic relationship. Other published reports have also found that CLBP patients consider their practitioners' professional skills important (Cooper et al. 2009; Snelgrove and Lioffi 2013). It seems that considering building strong patient-therapist relationship

may assist patients to adopt and maintain self-management strategies (Fu et al. 2016).

The important role of effective communication between CLBP patients and physiotherapists was frequently discussed in this study. Some of the participants evidenced disappointment regarding the level of communication they experienced with their physiotherapist. Some indicated that their therapist had a pleasant personal manner but felt the therapist did not provide enough information about CLBP and management techniques.

The importance of good communication between chronic musculoskeletal patients and their healthcare professional has been emphasized in numerous studies in the literature (Slade et al. 2009a; Matthias et al. 2010). Effective communication is considered an essential factor for facilitating CLBP patients' engagement with physiotherapy management (Cooper et al. 2008). Furthermore, a physiotherapist's ability to listen effectively may encourage CLBP patients to replace passive approaches with active self-management (Fu et al. 2016). Thus, it is important for health care policy makers to develop local CLBP management guidelines that promote communication and consider it an essential part of the therapeutic treatment within a holistic biopsychosocial model.

Participants in the current study highlighted some of the communication barriers between them and their physiotherapists. For example, some said their physiotherapists used jargon language and did not consider the patient's level of understanding. The results of a qualitative study with CLBP patients conducted by Morris (2004) similarly raised a concern regarding healthcare professionals' use of inaccessible medical terminology with patients, including diagnostic terminology.

Use of such terminology was observed to sometimes negatively impact patients' perceptions, which could then interfere with the management process. It has been recommended that healthcare professionals avoid excessive use of medical terminology and instead use common language with patients, for example, saying *non-specific low back pain* instead of *disc herniation* (Cedraschi et al. 1998).

The language barriers evidenced in this study were not limited to therapists' failure to use simple language. Sometimes an inability to speak one another's language and/or culture barriers between patients and healthcare providers also led to problems and misunderstandings. For example, one study participant could not communicate with the attending physiotherapist because the therapist's first language was not Arabic. The patient had to compensate by having his son attend the physiotherapy sessions to interpret and to explain instructions. There can be difficulties in relying on relatives to serve as a go-between in communication. In some cases, depending on a family member for translation may lead to missed appointments when the translator is unavailable (Taylor et al. 2013). Moreover, the same study reported that many of the participating male ethnic minorities who had limited understanding of English performed the prescribed exercises incorrectly due to overconfidence and misunderstanding translated instructions. Because implementing a patient-centred approach to physiotherapy requires both understanding patient needs and patient compliance with healthcare professionals' instructions (Lavizzo-mourey 2007), it is clear that successfully promoting client self-management requires minimizing language and cultural barriers between patients and physiotherapists.

In the current study, passive physiotherapeutic treatments, including manual therapy and modalities, were the type of interventions patients reported they expected to

receive. However, in much of the previous literature, active treatment approaches were the dominant methods delivered by physiotherapists for managing CLBP (Liddle et al. 2007; Cooper et al. 2009). In the present study, patients' expectations that they would receive passive treatments may have been due to previous experiences or personal preferences. It is worth noting that patients in this study with prior physiotherapy service experience tended to expect active treatment approaches. A similar finding was reported regarding CLBP patients' perceptions of exercise and factors such as previous experiences, culture, and environmental factors, all of which were found to affect patient engagement with and adherence to their prescribed exercise programme (Slade et al. 2009b).

Patients in the present study expected their physiotherapist to provide them with education about their condition, including both management strategies and explanations of causes and nature of the problem. Patients may consider a lack of information and understanding of CLBP a cause for fear and frustration. A published systematic review reported that patients with low back pain expected clear information regarding their diagnosis (Verbeek et al. 2004). In the same review, lacking an accurate diagnosis or having multiple diagnoses resulted in patient dissatisfaction. In addition, patients in the study expected clear instructions and guidance from healthcare professionals. A recent qualitative systematic review confirmed the previous review's findings on patients' desire for information regarding their condition and management methods for their low back pain (Fu et al. 2016). Patients' expectations regarding the types of information they would be provided included, but was not limited to instruction about their diagnosis, the intended treatment approach, and pain and self-management. Interestingly, patients acknowledged the importance of receiving this information even when they still

experienced pain related to their condition, because having the information enabled them to understand their conditions (May 2001).

Participants in the present study described several methods by which they received advice and information from their physiotherapist. Traditional written and verbal methods of communication were the most commonly expected and received types. In addition, use of image-based methods to educate patients was considered good practice by participants in the current study. Existing evidence suggests combined both written advice and visual materials such as diagrams beside providing exercise training and demonstrations can enhance patient performance of and adherence to a prescribed therapeutic regimen (Schoo and Morris 2003). This finding has been supported by other studies in which the researchers used moving visual materials such as video and virtual reality to enhance patient education (Sveistrup et al. 2003; Warburton et al. 2007). One participant in the present study also suggested using texting applications (apps) such as WhatsApp to share exercise videos. Use of a variety of apps may be an easy way to help patients avoid performing prescribed exercises incorrectly.

Patients' wishes for follow-up care after discharge from physiotherapy varied in the current study. Some participants preferred to have a follow-up visit with a physiotherapist after a certain period to monitor their progress, even after receiving a home programme. This finding is consistent with previous studies that reported CLBP patients tended to desire a follow-up session with their physiotherapist, even when their treatment program included active approaches and self-management strategies (Liddle et al. 2007; Cooper et al. 2009). The desire for a follow-up session could represent patients' desire for reassurance that they are following their physiotherapist's advice and management program correctly.

A face-to-face meeting was not the only follow-up method participants considered acceptable. Use of communication tools such as the telephone and email were considered reasonable alternative follow-up methods by patients in a previous study (Gruman and Von Korff 1999; Cooper et al. 2009). Such means of access to advice from physiotherapists could improve patient outcomes and reduce the number of patients waiting to be seen in person at clinics and hospitals. However, in the present study, some participants preferred to revisit their doctor face-to-face, in the clinical setting. Patients' attitude towards continuing to seek medical help may negatively affect their engagement with self-management (May 2007).

5.8.2 Impact of CLBP on Patients' Lives

Two common concerns identified by the CLBP patients in this study were a decline in their ability to perform physical activity and failing to meet social responsibilities. A published meta-synthesis highlighted the importance of grasping the broad social and emotional effects of CLBP in addition to understanding its impact on physical ability (Tsuji et al. 2016). A recent study in Japan reported that depression in CLBP patients was associated with lower quality of life, higher ratings of pain, and twice as many visits to healthcare providers compare to non-depressed CLBP patients (Froud et al. 2014). It thus seems that adopting and promoting a comprehensive approach that includes self-management may decrease overall demand on healthcare services, which in turn may lead to reductions in healthcare costs.

A finding in the current study was patients' fear of losing power and control over their lives. The importance of psychological, behavioural and cognitive factors has been discussed in the literature (Ramond et al. 2011). For example, identifying prognostic factors can help patients manage low back pain in its early, acute stage, before it

becomes chronic and the therapeutic outcome poor. A physiotherapist's ability to understand and work with client orientations and behaviours such as fear, avoidance, passive coping and psychological illness may affect patients' perceptions of and attitude towards CLBP and active approaches to management. Dures et al. (2014) recommended training healthcare professionals to recognize and respond to patient cognition and behaviour in order to enhance rheumatic patients' self-management. Self-management approaches that lack cognitive behaviour components mainly emphasise providing advice and information to patients about their conditions and do not consider psychological and social factors that may influence patient decision-making (Dures and Hewlett 2012). Such approaches derive from the biomedical model. In contrast, including cognitive behaviour components in self-management strategies allows physiotherapists to consider both clinical and psychological elements that may interfere with patient self-management.

However, it is important to understand that each individual has a unique experience during the learning process. Experiential learning theory (ELT) has highlighted this importance, and places experience at the heart of the learning process (Sternberg and Zhang 2011). Teaching is an action that provides knowledge to the learner, but does not necessarily guarantee that the individual learns the task. Thus, many personal, environmental and social factors could influence the learning process, such as individual learning skills, emotion, belief and social context (Moon 2004). ELT presents an alternative perspective of learning experience compared with cognitive and behaviour learning theory that rejects the subjectivity of the learning process.

ELT defines learning as "the process whereby knowledge is created through the transformation of experience. The definition emphasizes several critical aspects of

the learning process as viewed from the experiential perspective. First is the emphasis on the process of adaptation and learning as opposed to content or outcome. Second is that knowledge is a transformation process, being continuously created and recreated, not an independent entity to be acquired or transmitted. Third, learning transforms experience in both its objective and subjective forms. Finally, to understand learning we must understand the nature of knowledge, and vice versa” (Kolb 1984, p38). It appears that ELT presents a logical argument that can be useful in promoting self-management, and does not only depend on cognitive theory and compromising the influence of subjectivity of experience of illness and social context. In the current study, some patients discussed their experience with CLBP and the challenges of a process that may influence their adoption of self-management, such as social and work responsibility, as well as fear and inability to understand the physiotherapist.

5.8.3 Factors that may Help or Prevent Adopting Self-Management

Patients’ awareness and understanding of their condition may enable them to better manage their chronic musculoskeletal condition (Steen and Haugli 2001). A similar finding surfaced with the CLBP patients in the current study. This result may have been obtained because patients’ perspectives and goals shifted from expecting a cure to a more realistic acceptance of their condition as chronic (Liddle et al. 2007; Morris 2004; Kawi 2014). Such cognitive changes may help patients adopt the self-management approaches provided to them by their healthcare professional. However, acceptance and the decision to live with CLBP are not always the exclusive result of patients’ approaches to self-management (Crowe et al. 2010). CLBP patients may indeed believe their experiences living with their conditions help them manage and accept the reality that it is chronic, but the management skills they

develop may also derive from their interactions with healthcare professionals over a long period of time. In such cases, coping stems not only from patients' independent, lived experience but also from the help and support of the physiotherapist or other clinician.

In this study, it appeared patients' behaviour changes were related to their awareness of CLBP and the support delivered by their healthcare provider. On many occasions, participants referred to their physiotherapist as a source of inspiration and motivation, someone who gave them the drive to change their behaviour and lifestyle. A similar result was obtained in a published qualitative study involving participants with CLBP who were in an exercise programme. Those participants highlighted the important role their healthcare providers played in encouraging and guiding them to adopt an active lifestyle (Slade et al. 2009b). Practitioners' encouragement and guidance included various techniques such as understanding patients' needs and abilities, effective communication and providing useful information, and monitoring exercise practice and progress.

Relational approaches emphasise that acquired expertise is real and substantive, based on relating 'attribution' to other. However, the realist approach highlights that obtaining expertise occurs through a social process, via personal interaction with a group (Collins and Evans 2007). It appears to be very important to understand patients' experiences in coping with their chronic condition. Self-management could facilitate patients' coping strategies by providing them with the skills that they need to manage their condition in daily life, rather than to be passive and just wait for their next visit to their healthcare professional. Moreover, it could redefine the traditional patient-physician relationship by improving patient empowerment and treating patients as experts in their body. Thus, a self-management programme may be

considered the main platform designed by both healthcare professionals and patients to help patients to manage their condition and share responsibility. Willems (2000, p1) reported that the importance of a self-management programme is to redefine the responsibility between patients that are diagnosed with chronic diseases, such as asthma, and the physician as the following: "Patients, in measuring their lung function, first come to rely on measurements more than on felt disturbances, but next, felt disturbances become modified by previous measurements. Physicians, on the other hand, see their role changed from expert to being a participant in a joint treatment". Therefore, the patient's knowledge of their body is better than that of the physiotherapist, thus, during implementation of a self-management programme among CLBP patients, it appears that the patients are the experts with regard to who decides when it is time to take a break for a while, and when to stop sitting after sitting for a certain period of time.

However, not all CLBP patients in the current study were interested in trading their passive behaviour for a more active lifestyle. This reticence may have been due to personal preferences for passive coping strategies; however, prior evidence has suggested that getting patients to adopt an active self-management approach such as exercise requires considering patient needs, circumstances and ability (Slade et al. 2014). Moreover, adherence to self-management programmes can be improved when such approaches are promoted by therapists who clearly and overtly care about their patients and thus embrace patient-centred and biopsychosocial therapeutic models (Liddle et al. 2007; Dorflinger et al. 2013). Furthermore it has been reported that patients with low back pain preferred tailoring their self-management programme to suit them individually (Liddle et al. 2007; May 2007). Thus, it seems important to consider the possibility that many factors may influence

a patient's decision to adopt and adhere to an active lifestyle, including social, educational, financial and cultural influences.

Patients in the present study recognized the importance of using the self-management skills that were provided to them by their healthcare professional. Liddle et al. (2007) reported that patients' with CLBP often consider themselves responsible for poor outcomes due to failure to adhere to a prescribed self-management programme. Liddle et al. (2007) also noted adherence to self-management often seemed short-lived, lasting until a patient's pain was reduced. Interestingly, patients' with CLBP described in the literature tended to be more motivated and accepting of self-management approaches and active treatments than were those in the current study. This difference may be a function of the fact that most of the published studies were conducted in Western countries, which promote self-management as the primary method to manage low back pain (May 2007; Liddle et al. 2007; NICE 2016).

As mentioned earlier, it was clear that many of the patients' with CLBP in the current study generally expected and preferred passive management methods for their condition. This preference could have been due to participants' previous experiences with physiotherapy or to personal preferences. Passive management approaches included taking medications, resting and using preferred modalities, such as, electrotherapy and hot packs. These management strategies may have been influenced by the participants' perceptions of their healthcare professional's behaviour and beliefs about chronic pain and management methods (Daykin and Richardson 2004; Nijs et al. 2013).

However, not all of the participants seemed to have a negative attitude towards an active management approach, including some of those who selected passive treatments. Furthermore, participants seemed more receptive to active management if their treatment included both active and passive components. A qualitative study explored the self-management strategies of patients with CLBP and practitioner perception of their duty in promoting self-management reported patients with CLBP considered exercise a primary management approach, but many of those participants also reported using medications and heat to manage their pain (Crowe et al. 2010). It is important for physiotherapists to recognize patients' beliefs and preferences regarding management approaches, as doing so will likely help deliver more patients to centres of care and enhance patients' willingness to accept and adherence to self-management programmes (Dorflinger et al. 2013).

In the current study, many CLBP patients' understanding of self-management appeared to be limited to the ideas of needing to perform exercises and changing bad posture during sitting. Merely promoting active management approaches is not sufficient for healthcare workers to reliably induce client self-management, as patients often have to cope with a variety of factors such as lack of time to perform exercise, or conflicts between daily routines and the management programme (Sluijs et al. 1993; Cook et al. 2000). Because these situations force patients to make choices, it also seems important to consider cognitive factors that may affect a CLBP patient's engagement with self-management. For example, one cognitive factor, locus of control, has been found to be important. A stronger internal locus of control has been shown to be associated with having a positive attitude towards adopting self-management and active management approach among patients with CLBP and diabetic patients (Batista et al. 2015; Besen et al. 2016).

Patients' and physiotherapists' shared participation in decision making is considered an essential but not always easily achieved component of successful self-management programme. Difficulties may arise when patients and/or therapists cannot or will not share power and responsibility for therapeutic programmes and outcomes (Schoeb and Burge 2012). In the present study, patients' with CLBP appeared to prefer not to participate in decision making regarding management of their condition but instead to delegate that responsibility to their physiotherapist. Unfortunately, adopting a passive role in decision making may limit clients' willingness to accept and adhere to a prescribed self-management strategy, which in turn may affect their programme's effectiveness, because patients' with CLBP are in a better position to identify their needs, circumstances and abilities than are their healthcare professionals.

It is important that patients develop a positive attitude towards sharing responsibility with their therapist to achieve successful management of their chronic condition (Cramm and Nieboer 2014), as embracing a sense of teamwork may help patients engage in self-management and not depend excessively on the healthcare provider (May 2007). Feeling a shared responsibility also could reduce the frequency with which CLBP patients access physiotherapy services or visit other medical providers. However, taking responsibility for self-management will not necessarily prevent participants from visiting a healthcare professional. Some participants in the current study believed in sharing responsibility with their physiotherapists but also preferred to continue to access therapy services for treatment or follow-up. This finding parallels that of a qualitative study on patients' with CLBP who adopted a self-management approach. Several of those patients' with CLBP preferred to schedule future follow-up visits with healthcare professionals (Cooper et al. 2009). This

preference may have been due to the patients' need for reassurance and encouragement rather than dependence on the therapist.

Access to service was a common, shared concern among participants in the current study. This uneasiness may have arisen because the patients' with CLBP usually expected to receive passive treatments. However, worry about access was not limited to the expected type of treatment; it was also related to the immediacy and level of services they believed they could access. It has been reported that patients prefer to have direct access to physiotherapy within the National Health Service in the UK (May 2001; Liddle et al. 2007). However, in the current study, participants did not request direct access to physiotherapy services, although they did desire fast access to both medical and physiotherapy services. Further, in a previously published study, patients suggested using telephone or email to facilitate communication between physiotherapists and patients after discharge (Cooper et al. 2009).

The use of technology may enhance communication between healthcare providers and patients (Goldberg et al. 2004), which may lead to the delivery of patient-centred services. Moreover, technology could facilitate the empowerment of patients, such that they are involved in decision-making, by providing them with tools to choose treatment or monitor progress (Demiris et al. 2008). Internet-based applications could provide a great opportunity to access information, communicate with healthcare professionals if required and monitor and prevent a decline in the condition. A previous study highlighted the effectiveness of a chronic Internet-based disease self-management programme after 1 year of follow-up (Lorig 2006). In the current study, a participant reported having a positive experience with physiotherapy telephone support. Further investigation is required to identify the level of patient

acceptance and the cost effectiveness of using web-based self-management programmes in the KSA.

Culture and patients' beliefs influence their decisions regarding engagement with and adherence to treatment (Martin et al. 2005). Patients' beliefs regarding the advantages of exercise, and consideration of patients' circumstances and preferences could enhance their participation in a prescribed exercise programme (Slade et al. 2014). Several studies have reported a high rate of inactivity among the general public in Saudi Arabia (AL-Hazzaa 2004; AL-Nozha et al. 2007). This cultural propensity toward sedentariness may have a negative impact on patients' with CLBP willingness to adopt an active lifestyle and self-manage, because patients' previous lifestyle experiences are likely to affect current preferences. Having prior experience with activities such as performing daily exercises may help patients embrace and follow through with a recommended therapeutic exercise programme and self-management (Rhodes et al. 1999).

Further, gender should be taken into consideration by healthcare professionals in Saudi Arabia. A qualitative study conducted in Saudi Arabia involving female participants highlighted the concern that in general, women's and girls' health was poorer than that of men and boys because of females' social responsibility for taking care of family and restrictions on their mobility (Alyaemni et al. 2013). In the current study, only one female agreed to participate, a limitation that may have biased the results of the study, as the experiences of female patients may differ from that of men in regards to pain and functionality (Peul et al. 2008).

5.9 Conclusion

This study provided important information for both physiotherapists and healthcare policy makers in the KSA regarding patients' with CLBP expectations, preferences and needs. Participants generally seemed to prefer passive management approaches but did not refuse participation in self-management approaches such as exercise programmes and following physiotherapists' advice. However, patients' understanding of what self-management involved was largely limited to performing prescribed exercises and correcting posture. This narrow conception could be due to physiotherapists' reliance on management approaches grounded in the biomedical model. Understanding how physiotherapists' behaviour and beliefs affect patient compliance appears to be important; thus, a more comprehensive examination of both patients' and physiotherapists' perceptions will be presented in chapter seven.

Chapter Six-Qualitative Section - physiotherapists' perceptions of self-management of chronic low back pain in Saudi Arabia

6.1 Introduction

This chapter presents the third study of the current research project. Semi-structured interviews were conducted with physiotherapists to explore their perceptions and understanding of self-management in treating CLBP patients. In this chapter, sampling and the process of participant recruitment has been reported in the Method section. However, Chapter Three contains a comprehensive discussion on research methodology and method. Moreover, data collection, data analysis and discussion sections will be included in this chapter.

6.2 Aim

To explore physiotherapists' perceptions and understanding of self-management, particularly in treating patients who have CLBP.

6.3 Research question

What are physiotherapists' perceptions of self-management of CLBP in KSA?

6.4 Method

6.4.1 Study design

Qualitative methods were used in this study and semi-structured interviews were conducted to collect data. Framework analysis was used in the analysis stage of this study (Ritchie et al. 2014). Eighteen interviews were conducted with physiotherapists treating patients diagnosed with CLBP. Physiotherapists were interviewed between April and May 2016 in Jeddah City, KSA. Participants were recruited from both the

private and public sector. For example, the participants had worked in out-patient physiotherapy departments at two hospitals (private and public) and two physiotherapy clinics.

6.4.2 Sampling and Recruitment

Purposive sampling was used to recruit physiotherapists in order to ensure diversity among the participants (Berg and Lune. 2013). Thus, the participants came from various backgrounds and had a variety of demographic characteristics and experiences. For example, using this sampling process, physiotherapists would be selected based on their post-qualification experience, postgraduate degree and musculoskeletal specialty, alongside their age, gender, education, nationality, language.

Physiotherapists were recruited from the outpatient physiotherapy department and physiotherapy clinics in Jeddah. The head of the physiotherapy department or senior therapist helped in the recruitment process by circulating the invitation letter among physiotherapists. Physiotherapists who showed an interest in participating were given an information sheet and consent form (in Arabic or English) and advised to fill in the registration form within a week if they decided to participate (See Appendixes 3.2).

The researcher followed ethical considerations similar to those utilised in the patient recruitment process. This included clearly stating that physiotherapists have the right to accept or refuse participation in this study, and that participation in this study was completely voluntary. The therapists were provided with registration forms and all registration forms were stored in a locker that only the head of the physiotherapy department could access. The registration forms helped facilitate the recruitment

process by identifying participants' demographic characteristics prior to commencing the data collection. For example, the demographic information of potential participants – such as their post-qualification experience, postgraduate degree, musculoskeletal specialty, age, gender, education, nationality, language and preferred contact method – were identified through registration forms before the data collection was performed. These forms helped in the process of recruiting participants with wide-ranging and diverse experiences and backgrounds. They also helped assess potential participants' eligibility to participate in the study based on inclusion and exclusion criteria (see Table 15).

Table 15. Inclusion and exclusion criteria

Physiotherapist inclusion criteria	Physiotherapist exclusion criteria
Physiotherapists who have two or more years of clinical experience with musculoskeletal conditions.	Physiotherapists who work only with inpatients. Physiotherapist with less than one year working experience in the KSA.

Participants were provided the opportunity to select a convenient time and place to be interviewed. Moreover, organisational approval was requested in advance if the interview was conducted during work hours.

6.4.3 Semi-structured interview procedure

To ensure the researcher achieved the research aim, a topic guide was used during interviews with physiotherapists (see Appendix 6). This topic guide was developed

based on two elements: reviewing the relevant literature and the findings of the quantitative study.

The topic guide consisted of four dimensions: Assessment, Treatment, Self-Management and Patient-Physiotherapist Relations. The aim of dividing the topic guide into four dimensions was to ensure that the researcher covered the main elements of the research questions.

Five pilot interviews were conducted in advance of the main qualitative study. The advantage of using pilot interviews is the ability to test and adjust topic guides based on participants' responses and understandings. (Van Teijlingen and Hundley 2002) All pilot interviews were included in the data analysis because participants showed good understanding of the topic guide content and responded with positive feedback, and the interviews continued without changes to the topic guide. Overall, eighteen semi-structured interviews were completed. All interviews were conducted in Arabic at the two hospitals and physiotherapy clinics either in a quiet room or a meeting room to protect participants' privacy. Each interview period averaged around 20 minutes. Moreover, the researcher used the same procedure that was discussed in patient studies (Chapter Three and Five) to store and transform data in order to maximise participants' data protection.

5.4.4 Data analysis

The data analysis began early in the process of data collection, and ATLAS.ti 7 software was used for qualitative analysis (Friese 2012). A framework analysis was used in this study (Ritchie and Spencer 2002). Further discussion of selecting the framework analysis and ATLAS.ti was provided in Chapter Three.

Data analysis was conducted in the original language of transcription, which was Arabic. The final results were only translated into English by two researchers to ensure the researcher was working with text that closely resembled the original transcript and to minimize the data lost in analysis due to translation difficulties. Moreover, an independent bilingual researcher was allocated to review the translation process. Additional discussion about the translation process was also provided in Chapter Three.

6.5 Results

Twenty-nine physiotherapists were invited (17 male; 12 female) to participate in this study. Twenty physiotherapists agreed to participate and met the inclusion criteria. Because data reached the saturation level early, after 15 participants were interviewed, the researcher decided to conduct another three interviews to confirm this.

Overall, eighteen participants were interviewed independently (see Table 16). An equal number of male and female physiotherapists participated in the current study. Moreover, participants tended to be younger, with the majority being under 40. However, the participants had diverse characteristics in term of their education levels, experience and nationalities.

6.6 Research findings

This section presents the finding of the semi-structured interviews conducted with physiotherapists. Participants were interviewed to explore their perceptions and understanding of self-management, particularly in treating patients diagnosed with

CLBP. The main themes and sub-themes are presented in this section (see Figure 4). The following main themes emerged from the interviews:

Organisation

Patient personal and social factors

Physiotherapists skills and qualities

Physiotherapy management and treatment

Patient awareness and understanding

Physiotherapists understanding and adoption of self-management

Table 16. Demographic information

Code	Age	Gender	Nationality	Education level	Experience
1-1	27	Female	Saudi	Diploma	6 years
2-1	35	Female	Saudi	Bachelor	11 years
3-1	33	Female	Saudi	Bachelor	9 years
4-1	55	Male	Non- Saudi	Bachelor	31years
5-1	34	Male	Saudi	Diploma	12 years
7-1	30	Male	Saudi	Diploma	6 years
8-1	30	Male	Saudi	Diploma	10 years
9-1	27	Male	Saudi	Bachelor	4 years
10-1	39	Female	Saudi	Bachelor	20 years
11-1	36	Female	Saudi	Diploma	15 years
1-2	29	Female	Non- Saudi	DPT	7 Years
2-2	30	Male	Non- Saudi	DPT	8 years
3-2	47	Male	Non- Saudi	Master	22 years
1-3	35	Male	Saudi	Master	2 years
2-3	31	Male	Non- Saudi	Master	10 years
3-3	30	Female	Non- Saudi	Bachelor	10 years
4-3	24	Female	Saudi	Bachelor	2 years
5-3	24	Female	Saudi	Bachelor	2 years

6.6.1 Theme: Organisation

6.6.1.1 Subtheme: Autonomy and partnership

Participants were concerned about the physiotherapists' limited level of autonomy during patient assessment and treatment, and also differed in their perception of physiotherapists' autonomy level in clinical settings. The first group believed physiotherapists lacked autonomy in assessing and/or treating patients. The other group believed physiotherapists had limited autonomy in clinical settings.

I told you our main problem is our inability to diagnose patients from A to Z. Our responsibility is to do exactly what is written on the referral from orthopaedics doctors, but sometimes patients come fully convinced they know what was said to them in the orthopaedics clinic. Regardless of how much you try convince them otherwise, they will hold their ground. (P1.2)

The idea of telling the doctor something different will get me in trouble. I am one of those who believe that talking to the patient is the best solution. (P1.9)

Participants belonging to the group that believed physiotherapists lacked autonomy tended to be more negative in their approach to being involved in decision making and discussing treatment options with their physicians. Those participants may have felt or been overlooked by their peer healthcare professionals, especially in terms of the importance of physiotherapy's role in enhancing and managing patients' symptoms. Moreover, physiotherapists believed that their opinion could be ignored by physicians, as well as that the physiotherapist does not have the right to diagnosis and sometimes, patients may be referred with a specific treatment plan by their doctors.

In the clinic, we have a doctor who always prescribes ultrasound and hot packs.
(P1.1)

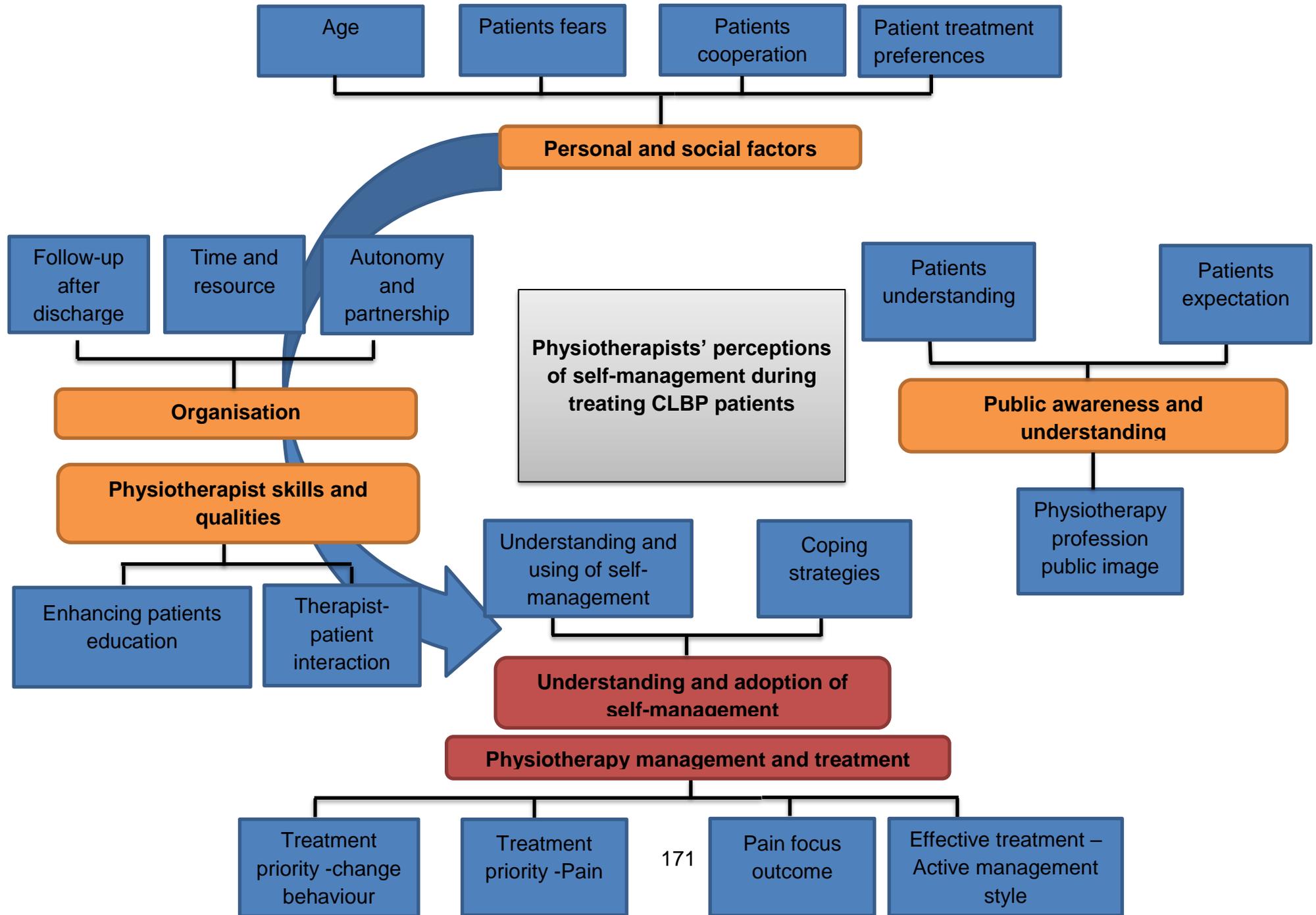
It comes down to peoples' ideas about physiotherapy— that it always has something to do with massage. This misunderstanding goes far, to an extent that even doctors in the hospital—and I am saying here orthopaedics doctors—don't know exactly what we do. They ask us about our role as a physiotherapist. (P1.2)

Furthermore, physiotherapists reported that a lack of autonomy had damaged patients' trust in physiotherapy. Because their patients had already been diagnosed by a doctor and referred to physiotherapy with a certain treatment plan, these participants felt they had been treated as technicians not therapist, and believed this had a negative impact on their professional image.

It makes me angry that you repeat your advice, tell them more than once what to do, tell them, 'This is wrong; don't do it'. But in the end, they go to the physical medicine doctor, who tells them once, 'This is what will help you', and they are convinced. If that is what the patient wants, then that's fine; I will press the button (meaning electrotherapy) and leave. (P5.1)

Here, we don't have any right to be autonomous. The patient will come to you from the orthopaedics doctor and tell you that her case is such and such ... She (the patient) told me (pointing to leg), 'The problem is here. Come and work here on it'.
(P1.2)

Figure 4. Themed and subthemes physiotherapists' perceptions of self-management during treating CLBP patients.



However, not all participants reported a complete lack of autonomy. They acknowledged that physiotherapists had a limited level of autonomy. But their approach was different from the previous group; instead of being passive in terms of making decisions and selecting patients' treatment plans by accepting all physicians' diagnoses and treatment plans, they preferred to discuss these factors with the physician and make changes to the treatment plan if necessary. Moreover, they acknowledged the physician's role and experience in terms of diagnosis, but believed that physicians should not be involved in crafting the physiotherapist's treatment plan.

We therapists do not have the authority to write (select treatments), so the physiotherapist did what she thought was right, but we did not dismiss the referring doctor's treatment programme. However, sometimes we discuss with them (the doctors) what patients need. For example, we have told them, 'The patient needs this, and we can use another treatment. What do you think?' They (the doctor) did not refuse. (P1.1)

If you want to get back to reality, doctors here (SA) are not adequately qualified. In the end, it is the physician who can prescribe medications, and that's it. Physicians will diagnose the case, and they will not interfere with those parameters or techniques related to physiotherapy. It is your (the physiotherapist's) responsibility to develop your skills. There is no other way; you need to develop yourself by yourself. (P2.1)

6.6.1.2 Subtheme: Time and resources

A lack of adequate time for physiotherapy sessions was reported frequently. The participants considered the limited time afforded by the sessions to be a major factor

that could negatively impact their ability to deliver advice and self-management skills to patients. Moreover, delivering exercise and group exercise some time become difficult to do due to limited time and different schedule among physiotherapists.

I have limited time to spend with patients. I mean, I have 30 minutes to hurry between machines and exercises to complete a session, and after that, I need to tell (the patient) what to do, and there is no adequate time to do all of this.... I wish there were group exercises. But there is no time, and in general, the system (management) doesn't allow us to do such things. (P1.1)

I don't have adequate time to spend with the patients. (P2.1)

Long patient lists and high demand for physiotherapy services has a negative impact on the quality of care delivered to patients. The participants showed concerns about the quality assessment and monitoring that have been used to measure physiotherapy services, which are based mainly on quantity of time, not quality of care. Participants felt they had been under pressure and faced criticisms from senior staff members if they extended physiotherapy sessions for patients who they thought needed them.

If senior staff says you spend too much time with patients—I mean, spending 45 minutes with a patient—this is something that is out of control. Sometimes I find myself giving everything I can to the patient, but the senior staff is not satisfied. (P9.1)

The problem is with the quantity (of therapy), not with how we perform it. This is our biggest problem. (P2.1)

They have a long waiting list of patients. You know, they have a lot of patients, so they can't spend more than 30 or 45 minutes with each patient. (P1.3)

6.6.1.3 Subtheme: Follow-up after discharge

Many participants highlighted the importance of follow-up at the time of discharge and after discharge to ensure patients understand and follow the recommended exercise and advice of their physiotherapists. The participants believed that if patients were followed up from time to time, the cost of treatment could be reduced, helping patients to manage their CLBP condition more effectively.

Frankly speaking, I believe we need something such as patient education, someone following up after (exercise), because we don't have adequate time. I can admit a patient to the clinic; then someone else follows up the patient's progress to ensure they know their exercises and make sure the patients fully understand (how to do) them and correct them if they do something wrong. (P1.1)

Often, I have talked about a home programme, that we do home visits, even if it was once a month. We could follow patients and monitor their progress, see if we could treat them and correct them, provided there were no extra costs to the patients or the hospital. A home programme is not implemented here yet. (P10.1)

The practice of follow-up varied among participants. Some participants preferred for patients to visit the physiotherapy clinic only occasionally and requested that patients adopt a more active lifestyle and promote a more self-managing approach. However, many participants preferred for patients to visit the physiotherapy clinic on a regular basis to follow-up and re-assess their condition.

We tell the patients to come back after six weeks, after the end of the (physiotherapy) programme. We tell them that what we give them here is mild exercises. We ask them to go and get a membership at a gym, and do similar

exercises there, and come back here after six weeks to see if there is a change.

(P1.3)

Yes, but there are patients we discharge from the clinic, and we do a follow up, even if it is after two to three months. We ask them to come back to assess their situation.

I ask them (those who have a chronic problem) to come back to the clinic. (P3.3)

I recommend to those patients who are doing very well not to discontinue physiotherapy sessions, especially those who have almost completed their physiotherapy programme. I ask them to come back and to do a maintenance session on a regular basis, every two months. (P1.2)

6.6.2 Theme: Personal and social factors

6.6.2.1 Subtheme: Age

Participants' experiences showed that older patients tended to resist any changes to their lifestyle, including the adoption of a self-management approach. Older patients preferred a passive treatment method and some of those patients had the perception that physiotherapy treatment would amount to massage. Physiotherapists' advice and home programme recommendations, such as performing regular exercise and adopting an active lifestyle, were usually ignored by older patients. The main factor preventing older patients from adopting an active lifestyle, including, for example, regular exercise, was a lack of previous experience with such activity. However, younger patients were more flexible and adhered more to physiotherapists' advice and recommended programmes.

I noticed that when a patient is young, he tends to be more open to patient education. Those who are older, they are less open. In particular, those with experience tend to tell you they don't want to do all of these exercises and (instead)

want something put on them (passive treatment) to let them finish the session as quickly as possible. (P5.1)

For sure, the tendency to accept this idea (adopting active lifestyle and self-management approach) is different for those who are young or old. There is still the idea that physiotherapy is all about massage, but when you are dealing with young people, then you can explain what you do to them in a brief, scientific way. They tend to get it, and they start to feel significant changes (in their health status), and it all comes down to the age of your patient. (P2.2)

Various methods and factors could enhance older patients' engagement with physiotherapy management, including home programmes. Considering the psychological component of treatment and talking in clear and simple language may help patients to better follow their physiotherapists' advice. Moreover, family support seemed to be an important factor in achieving treatment goals. For example, some participants preferred for family members to attend physiotherapy sessions because they believed they could help patients adhere to physiotherapy programmes, even at home.

It depends. If a family member is attending the session with an older patient, then they tend to be cooperative, as they understand more than (their elder), but you need to tell them. (P11.1)

If my patient is a very old woman, I tend not to give her a home programme; I tend to give it to her daughter. (P4.3)

6.6.2.2 Subtheme: Patients' fears

Several participants reported patients' fears of conducting spinal surgery. Some patients decided to attend physiotherapy sessions only to avoid spinal

surgery. Many of those patients were not sure about the effectiveness of physiotherapy in helping them to manage their CLBP. Moreover, various factors had motivated patients to attend physiotherapy sessions, such as, previous personal experience or word of mouth.

The majority of patients come here as a last resort, to avoid surgery. A percentage want to avoid surgery, and a percentage have heard that physiotherapy solves low back pain problems, and that is why they seek physiotherapy treatment. (P4.1)

Many of these cases will come to seek your private services. They are avoiding surgery, and that is why they attend physiotherapy. You reach a point where you really don't know how to help them. (P2.2)

However, not all CLBP patients who attended physiotherapy sessions had a negative view of physiotherapy's effectiveness. It seemed that having previous positive experience with physiotherapy helped patients to trust in the effectiveness of physiotherapy. Participants reported that those patients' goals were not only limited to avoiding surgery and reducing pain, but included enhancing functionality and their ability to perform daily activities.

No, she is coming with a prefixed idea that she will get better, because she said, 'I did that, and I got better', so she is coming back for that to avoid surgery. She wants to attend physiotherapy, and she knows very well terms such as traction and stretch. She knows them very well. (P4.3)

The majority of them, they spend a long time suffering. They went to the doctor, and (they tell me), 'We tried this (treatment), and we tried that, and still I am unable to sleep. I can't stand up when I want to stand up. People now know that I can't move,

and my children are always carrying me around. Now I am dependent on them. I can't serve myself, and they are doing everything for me'. (P5.3)

6.6.2.3 Subtheme: Patients' cooperation

Many participants were concerned about CLBP patients' low level of adherence to physiotherapists' advice and home programme recommendations, which included self-management components. Physiotherapists felt that patients depended mainly on their physiotherapy sessions at the clinic and believed that was enough to help them to cope and manage their condition. Patients' acceptance and understanding of their conditions have been highlighted as important elements that may enable them to change their lifestyles, rather than only seeking a quick fix, such as pain killers, or passive treatment approaches, such as modalities.

Patients have a problem in that they don't listen to instructions. We tell them to avoid certain things, and still they go back to do what they used to do in their life before feeling the pain. (P2.1)

I swear to God that 20 to 30 percent accept it and follow it (instructions), but unfortunately, a big percentage, a big bunch of them ignore it, and they depend on the physiotherapist. (P8.1)

Some patients accept changes in their lives, and some of them don't accept changes in their lives, and they want a quick fix, and they even ask you for medications, if they will help. (P4.1)

The participants considered enhancing patients' cooperation to be a physiotherapist's responsibility, and one not only limited to CLBP patients.

Participants reported that a physiotherapist's communication skills, including non-verbal skills, such as smiling, could help patients to engage more with their treatment

programmes. Furthermore, helping patients to be more involved in decision making and setting both long- and short-term goals could motivate them to adopt their physiotherapist's advice.

Yes, it makes a difference when they (patients) are feeling relaxed. I can feel it when they are worried or relaxed about my behaviour. They (patients) tend to be cooperative with the therapist. The most important thing is to let the patient calm down and feel relaxed. (P4.3)

It all comes down to the goals I determined, depending on the patient. Whether I need to consider long-term goals or short-term goals. Some people want to achieve small targets first and postpone a difficult one for later, and some people do the opposite. (P3.1)

Moreover, the severity of CLBP symptoms seemed to be a significant factor in terms of whether patients followed their physiotherapist's advice. Patients with severe symptoms tended to adhere to the treatment programme more often.

Look, frankly speaking, those whose pain impacted their lives will adhere to therapy for two to three days, and once their pain diminishes, they tend to be less involved. (P9.1)

6.6.2.4 Subtheme: Patient treatment preferences

CLBP patients' preference for a passive approach was frequently discussed among the participants. Medication seemed to be patients' first choice to reduce pain. Those patients tended to focus on the pain more than on restoring their functionality.

Moreover, on some occasions, patients may seek any type of medication or modality that may help them to reduce pain, even temporarily. Many participants expressed concern that their patients' main priority was pain.

The majority use pain killers such as patches they buy from outside. (P1.1)

Our main problem here is that patients come with great concern about their pain, and they don't care much about whether the original problem has been fixed or not. What is most important to them is that they don't feel their pain any more. What I am trying to say is that pain should be the last thing (the patient) thinks about, as there are more important issues we need to fix other than pain. (P2.3)

Taking pain killers—and some of them, they use hot packs. Some of them. But the majority take pain killers without knowing what they are taking. (P4.3)

However, participants also reported that some patients' priorities restored their functions and enabled them to perform daily activities. Those patients seemed to measure the success of their physiotherapy programme based on their ability to perform activities that they used to perform. These activities might not be complicated, such as being able to perform prayer. Participants were concerned that patients sometimes had the unrealistic goal of being completely cured and able to perform all activities again. Restoring functionality motivated them and imbued them with a feeling of self-confidence.

Their goal is not to have any disability that affects their function; they want to return to their work, and they want to move around without losing any function. (P3.1)

Patients are divided between those who noticed that physiotherapy helped in reducing their pain and those who didn't. Doing this (coming to physiotherapy clinic) repeatedly will cause them to come back to you again, and they don't depend on themselves or (recognize) they need to change their behaviour to prevent this problem. (P7.1)

(Physiotherapist reporting patients' feelings): 'I feel better now, thanks to God, I can kneel and pray without a problem, and I can walk without fatigue. I noticed a difference'. (P5.1)

6.6.3 Theme: Physiotherapists skills and qualities

6.6.3.1 Subtheme: Enhancing patient education

The importance of patient education was also highlighted by many participants, though the recommended education varied among participants. For example, some participants believed consistent follow-up was important to ensure patients understood and implemented exercises correctly.

I need to be honest with myself that there is something—we call it patient education—that there is someone who follows up with the patients, as we don't have adequate time, I mean, to recruit someone to follow up with the patient. Certainly, we know the exercises, and we make sure they understand them and do them correctly. (P1.1)

Moreover, the participants reported using educational material to promote physical exercise. Written and visual materials were both considered. Some participants preferred using visual materials because they were more suitable for some CLBP patients, especially if the patient was illiterate. Furthermore, it may be much easier for patients to remember visual materials than written text. Using smartphones to promote and facilitate patient education offers easy access to information.

I wish there were some tutorial videos, and not just ones talking (to the patient), because when you say something, you need to depend on people's memory. You need tutorial videos which show exercises to the patients and influence them. (P2.3)

To give them some brochures, or something like a video, because some of them can't read or write. Something visual can gradually help them remember. (P1.1)

Look, brochures are important to educate people and to transfer information.

Nowadays, everyone owns a smartphone, and physiotherapy should utilize this to educate people. (P7.1)

Some participants believed that patient education is not limited to advice and home programmes, but included ensuring that CLBP patients understand their condition. That could include conducting lectures led by healthcare professionals to explain CLBP to those patients, as well as peer interactive meetings between CLBP patients following these lectures.

Many things. First of all, contacts; secondly, handouts; thirdly, audio-vision (video) and lectures. We do low back-pain patient education and ACL lectures. Interested patients will come and see a specialized physiotherapist like me, and sometimes, they will see a consultant doctor for one or one-and-a-half hours. Sometimes we give patients a pamphlet, and they digress from the topic to their social life. (P4.1)

We have an open day, or a day when we gather patients and let them sit in one place, and they start an informational show or an introductory video, and provide adequate explanations of things around here—(for example) that a given problem is very common in Saudi Arabia, and it affects all ages because of such and such, and these are the reasons why. (P5.1)

Physiotherapists' responsibility to promote patients independence and self-management was discussed. It has been reported that it is physiotherapists' responsibility to improve their psychological skills in order to enhance their ability to understand patients' needs and acceptance of physiotherapists' advice. That may be

accomplished through participation in continuing professional development course and workshops.

Yes, a physiotherapist needs to use psychology so the patient tends to accept his instruction. For example, the first time I worked in rehabilitation, the doctor sent me to a psychiatric hospital, and I took a course in psychology. (P2.1)

With all the therapists I have worked with, in all the places I have worked, everyone was trying to give to the patient, and encourage the patient, and enable patients to self-manage. (P3.2)

6.6.3.2 Subtheme: Therapist-patient interaction

Participants acknowledged the importance of patient-physiotherapist relations that may influence patients to accept physiotherapists' advice. Building trust between a physiotherapist and a patient has a significant effect on patients' inclination to adhere to physiotherapists' instructions, as the participants in this study reported. That may lead patients to share and discuss their needs and thoughts with physiotherapists more openly. Moreover, trust between a patient and physiotherapist could assist physiotherapists in changing patients' perceptions of CLBP and encouraging them to adopt a healthier lifestyle.

If patients trust you, they will give you everything. As a human being, the first thing I do is to build trust with the patient. I will respect his rights, and he, in turn, will listen to my full instructions and believe them. I will have the patient with me if I gain his trust. (P2.1)

There is an unfortunate idea. Nearly 60 percent of our patients believe that if I did massage, they would feel less pain. They believe the ultrasound, TENS and exercises don't help them at all. But they believe in massage and anything spiritual.

Those are the majority, but when you explain things to them, some of them will change their view. (P1.1)

Physiotherapists' communication styles were also discussed by participants. It seems that adopting a particular attitude differs based on patient preferences. For example, some patients prefer a friendlier and informal communication approach. However, the other group of patients could prefer a more formal style.

It is different between patients. There are patients who like to be treated as friends, and there are those you need to be decisive with, as they need to sense the value of your treatment. Again, it varies from one individual to another. (P3.1)

Participants recognized the importance of physiotherapists adopting a positive attitude and sense of responsibility that includes caring for CLBP patients on both a professional and human level. The participants believed that physiotherapists should consider and treat patients not only because it is their part of duties to do so, but based on the human nature of caring.

A lot of people entered this profession (physiotherapy) because it will provide them with a salary, and that is it for them. They don't care about patients. ... and there are those who love the profession and excel in it, implementing new things, reading a lot, and attending lectures. They are active and creative. (P4.1)

The strongest relationship is between two individuals (patients and physiotherapists): one needs the other. That is why I believe this process must be purely humanitarian. (P2.3)

6.6.4 Theme: Physiotherapy management and treatment

6.6.4.1 Subtheme: Treatment priority – Changing behaviour

Understanding and knowing patients' current lifestyle was reported upon and discussed by the participants. They believed a physiotherapist should begin by exploring a CLBP patient's lifestyle and identifying their needs. That could enable the physiotherapist to tailor a physiotherapy programme that suits each CLBP patient's individual needs. It appears that tailoring patient treatment based on individual needs can help to enhance patient empowerment. That is because understanding patients' needs and abilities, as well as effective communication by physiotherapists, may facilitate the adoption of self-management through building a feeling of independence, via improving patients' self-efficacy. Moreover, understanding patient preferences requires effective communication between patients and physiotherapists, and may identify any barrier to the adoption of self-management, as well as misconception with regard to the effectiveness of passive treatment.

I should not just employ modalities and exercise without understanding patients' lifestyles and helping them self-manage in their homes. That (approach) is more effective. (P9.1)

Honestly, they need to change their life style completely.; I don't feel that there is anything that will cure them. They knows the reasons, and they are the only ones who know the reasons, and there is nothing he they can do except to change their life-styles. (P1.3)

Furthermore, participants highlighted the importance of the physiotherapist's role in helping CLBP patients changing their lifestyle. Participants considered changing the behaviour of CLBP patients and helping them to adopt functional goals to be the

main factors in helping them to manage CLBP successfully. The physiotherapist's main duties were reported to be facilitating the process of changing CLBP patients' bad habits and lifestyles. For example, bad habits include sitting in the wrong posture or for a long time. Changing behaviour includes exploring patients' understanding of CLBP, patients' perceptions in regard to effective treatment and patients' preferences. Identifying those elements could help physiotherapists to guide patients to select healthier, active lifestyles that suit each individual.

To change their lifestyle before anything else. ... They need to change their bad habits, which you do on a daily basis. It is important to change how an individual thinks, to know exactly where the problem is, to let him know he is the reason behind the problem, and he is the one who can solve it. (P2.2)

I need to explain to the patient that I will not cure the problem (CLBP), especially if he has disc (issues). But I will say to the patient, 'My role is to help you to manage your problem and live a lifestyle that helps you manage your pain'. I have to be honest with my patients and tell them, 'This is my method: One, two, three'. This will motivate them psychologically. (P1.2)

6.6.4.2 Subtheme: Treatment priority – Pain

The majority of participants considered reducing pain to be the main priority to achieve during CLBP patient treatment. Participants reported that the major factor that led physiotherapists to focus on reducing pain was that it was usually patients' first priority. Moreover, participants highlighted the importance of adopting a comprehensive approach during CLBP patient treatment that included reducing pain, offering advice and promoting an active lifestyle. It seems that many of the

participants understand the importance of patients engaging in more active behaviour.

Every patient comes to reduce pain after this, to maintain his or her health status in order to prevent the pain from coming back. (P1.1)

The thing that brings patients to the (physiotherapy) clinic is pain, so it is normal to explain the cause of that pain and the treatment method we will follow. ... In the beginning, we try to reduce the pain and give patients stretching exercises and modify their behaviour in daily life—in term of sitting, exercise and other daily activities. (P1.8)

Moreover, some participants believed that reducing pain first had a psychological impact that motivated patients to follow their physiotherapist's advice, which mainly included promoting an active lifestyle and a self-management component.

First, before anything else, (the goal) is to reduce pain, because if my work reduces his pain, then I can convince him to change his way of thinking and start a change that might reduce pain. Then he will be convinced that I can help him, and that might help him change his lifestyle. (P2.2)

The goal of treatment is to reduce pain and enhance their situation, and at the same time, educate patients and encourage them not to lose hope. But the main goal for me is to encourage patients to adopt specific activities to prevent recurrence of the problem. (P3.2)

6.6.4.3 Subtheme: Pain focus outcome

The methods that participants discussed to measure participants' progress were pain oriented. Participants used valid outcome measures, such as Numeric Pain score

scale to assess patients' progress. Some participants admitted they did not use any outcome measure and only asked CLBP patients to compare the level of pain before and after receiving physiotherapy treatment. However, some participants considered some other test, such as a muscle and range of movement test, but no participants reported using any validated functional outcome measure.

We have pain management for low-back pain, from 0-10. ... It will give you an idea whether you are on the right track. Also, it will help patients feel comfortable and show them the (level) of improvement. (P4.1)

It will show the level of patients' improvement, so the level of pain will be presented.

We are trying to use tools (scales) as much as we can. (P3.1)

The available scale is for pain, muscle power and range of motion in and around the lumbar and pelvic (regions). So, if there are problems with range of motion, we tend to test pain, muscle power and range of motion. (P7.1)

6.6.4.4 Subtheme: Effective treatment – Active management style

Exercises are a common method of treatment that participants believe has a significant impact in helping CLBP patients manage their own care. Participants differed with regard to selecting the most effective type of exercise, however. For example, some participants prescribed general exercise, such as stretching or stretching exercises. The other group prescribed a more specific approach, such as McKenzie (mechanical diagnosis and therapy). Both groups shared the same idea regarding the importance of a home programme. Moreover, some participants reported physiotherapy sessions alone were not enough to help CLBP patients to manage their condition. Participants preferred using functional activity, such as swimming, because it may help some CLBP patients who are overweight.

Generally speaking, exercise and brief electrotherapy (is used for) for pain relief, but exercise has been used here or in-home for home programmes. (P8.1)

The most common treatment method is exercise to help change problematic behaviour. Moreover, a balance between stretching and stretching exercises help increase range of motion. (P7.1)

Treatment depends on (the cause) of low back pain. If it was a disc, I might use the McKenzie extension programme. (If it is in the) sacroiliac, I can use exercise, mobilization and taping. I mean, it depends on the diagnosis, and I do not treat the symptom. (P4.3)

However, the effectiveness of using a comprehensive approach was also discussed. Some participants believed that using a comprehensive approach could help CLBP patients in a more effective manner.

With them (patients), I use stretching to reduce muscle spasm, independent of the method, even if it is a shock wave. The most important thing is to reduce muscle spasm using mobilization. Then we can start strengthening and offering advice such as, 'Do not sit for a long time, even during sleep. Try to change (position)'. (P5.3)

6.6.5 Theme: Public awareness and understanding

6.6.5.1 Subtheme: Patients' expectations

Most participants reported that CLBP patients expected to receive a massage as the main or partial component of treatment during their visit to the physiotherapy clinic. Those participants showed concerns in regard to patients' expectation of physiotherapy treatment, especially because CLBP patients seem to expect to receive passive treatment, such as a massage and modalities. That may have a

negative effect on their acceptance of an active approach, such as exercise and a home programme, as has been reported.

Usually, they come for massage. We have a massage chair here, and it leads to a problem. All our patients are chronic, and they want to use the massage chair. This chair provides only heat and little vibration. (P5.1)

If you begin and ask them (patients) to perform exercise, patients might feel uncomfortable. Let's assume a patient has a chronic condition; how I can start with exercise when the patient already feels pain which prevents him from walking? He (the patient) did not expect to be doing exercises here and also (in a) home programme. (P9.1)

Most of them (patients) think it is all about massage. But after we teach them, (they understand) that it (treatment) is not done manually, but instead there are methods and exercises. However, many patients depend on methods more than exercise. (P11.1)

Some people come to physiotherapy and think they are getting a massage session. I feel sad, because that will not solve their problems. (P1.3)

Furthermore, some patients seem to have unrealistic expectations of CLBP progress. That issue was discussed by some participants, who highlighted their concerns regarding patients with very unrealistic approaches. For example, one participant felt that some patients believed physiotherapy would have a magical effect.

They think it is magic, (that) after only one session, everything will return to normal. (P2.1)

6.6.5.2 Subtheme: Patients' understanding

CLBP patients' lack of clear understanding of their condition was discussed. That may be due to their lack of a clear diagnosis, which can confuse patients and have a negative effect on CLBP patients' adherence to physiotherapy programmes. It has been reported that some CLBP patients have tried a different sort of complementary medicine or treatment in seeking to cure their conditions.

It is sad when patients do not understand their condition. Patients spend a little time in physiotherapy, then move to using cauterization, cupping, reflexology and manipulation to relieve their pain. (P5.1)

Some participants believed there are some limitation in regards to educating LBP patients and explaining their condition to them, including diagnosis. Those participants advocated patients' early involvement and shared information about their conditions with them before referring them to physiotherapy services. Moreover, participants believed physiotherapists had a duty to explain to patients' conditions to them and the details of the physiotherapy programme that will help them to cope with CLBP.

This should be introduced from the beginning. I blame those doctors who diagnose patients after assessing them, and in the end, write the diagnosis without telling the patients. After referring the patient to (physiotherapy), we ask the patient in the first session about his conditions and compare what is written in the file with the patient's understanding of his condition. (P9.1)

The first thing I have to explain to each patient is his or her condition, because I'm confident the patients are coming without having any information other than having

read that their diagnosis is 'disc'. However, he (the patient) did not understand the cause and meaning of 'disc'. (P2.2)

The method of delivering patient education as such would be to tailor it to the individual in question by, for example, being creative and using an education programme that suits patients' understanding and education levels. Moreover, physiotherapists should use simple language to explain and educate CLBP patients about their conditions and provide advice. For example, one participant reported an incident with a CLBP patient who believed her problem was in her foot, not her lower back, because she had numbness in the foot.

It depends on patients' backgrounds. Some patients are illiterate. I (the physiotherapist) typically tell her (the patient) to perform an exercise in front of me, and sometimes she performs the exercise incorrectly. (P5.3)

Some patients do not understand they have lumbar disc (problems); they do not feel pain in the lumbar area, and symptoms are more in their leg. I (the physiotherapist) treat her leg, but she insists, 'My problem is in my leg, not in my back'. I try to explain to her, 'The problem is in your leg because of your back', but she does not understand. (P3.3)

6.6.5.3 Subtheme: The physiotherapy profession's public image

The image of physiotherapy among the general public and CLBP patients was frequently raised. Some patients were not sure about the effect of physiotherapy treatment because they tried medication and other treatment and only attended physiotherapy services as a last option. Moreover, participants raised concerns with regard to the position of physiotherapists in the current health system in terms of limited autonomy, rights and the senior management roles that have been provided

to physiotherapist. However, not all participants shared the same view in regard to the position of physiotherapy within healthcare. For example, one participant reported that the negative image of physiotherapy could be transformed to a positive one through patients' personal experience after using physiotherapy services.

Sometimes the doctor in hospital is not our doctor. Even orthopaedic doctors and other specialists underestimate us (physiotherapists). They say, 'What is your role as a physiotherapist?' I used to work in Hospital L, a paediatric hospital. They (the doctors) said, 'What are you (as physiotherapist) able to achieve with a child diagnosed with CP? What level you are going to reach?' (P1.2)

There are two types of people who come (to physiotherapy). The first group are—they have pain and want to reduce it but are not sure about the result. The other group has severe pain and want to do anything to reduce this pain. They have already tried medication, and the pain still there, so they say, 'We will follow your advice (the physiotherapist's) and see the result'. (P5.3)

6.6.6 Theme: Understanding and adopting self-management

6.6.6.1 Subtheme: Understanding and using self-management

Most of participants showed a limited understanding of self-management methods such as; *cognitive behaviour therapy*. The level of awareness and understanding among those participants seemed to vary. Some of those participants reported that they have read some information about self-management methods.

The understanding of self-management approaches varied among participants. For example, self-management has been defined as an approach that helps patients to be able to change particular bad habits. Moreover, another participant's explanation was that self-management is a treatment that helps to encourage and adopt positive

behaviour and change negative behaviour in patients' daily lives. However, some participants were not able to explain the concept of self-management because they were not aware of this concept. Moreover, participants who described self-management reported that the approach was not implemented in daily physiotherapy practice.

I heard about it (cognitive behaviour therapy), and I have read about it but not used it in treatment. (P1.1)

No. Do you mean regular, daily behaviour for patients or physiotherapists? We follow (a self-management programme) based on our experience with patients and printed brochures. (P8.1)

I have not read in depth about it (cognitive behaviour therapy), but I think (it would be useful) to prevent bad behaviour and promote good behavior, specifically, to change behaviour that causes (problems) and also ways of thinking. I always told them physiotherapy should promote lifestyle changes, because lifestyle includes eating, sitting, walking, standing—all this wrong behaviour that patients may not recognize are regular, daily activities, whereas the physiotherapy session may extend only to one or two hours. This is the main problem. (P7.1)

6.6.6.2 Subtheme: Coping strategies

Participants reported several coping strategies that are usually used during physiotherapy sessions. The majority of participants promoted self-awareness and an active approach, except for advice by a single participant to their patients to take rest. The advice varied between general approaches to promote changing CLBP patients' behaviour and helping them to adopt new healthier lifestyle or focusing only on prescribing a daily exercise plan and advice on what activities to perform and

avoid. For example; some participants spoke of enhancing CLPB patients' general knowledge and helping them to focus in managing their conditions through explaining to them the aggravating factors that may increase LBP symptoms or the easing factors that may decrease CLPB symptoms.

We need to know first the cause of his problem and the reasons behind his condition becoming chronic—what activities he used to perform, because maybe his sitting was incorrect, so we teach him the right way. If the problem is his weight, we inform him and advise him to reduce his weight. (P2.2)

"The advice that I should give it to him is how to protect his back and manage himself during the day, h. How to pick up things from the floor and protect his back during daily life. , I should teach him that. (P11.1)

(I recommend) relaxing and avoiding bad habits and visiting physiotherapy. (P8.1)

(I recommend) long-term exercises to keep his muscles active and to keep the blood circulation running and void poor positions. (P3.2)

6.7 Discussion

This study highlighted important aspects of physiotherapists' beliefs and attitudes about chronic low back pain management in Saudi Arabia. Understanding these beliefs is important because they may affect how physiotherapists treat patients. For example, healthcare professionals whose beliefs are grounded in the biomedical model tend to recommend low back pain patients reduce their physical activity and increase bed rest (Darlow et al. 2012). These recommendations contradict recent guidelines that promote physical activity, continuation of normal daily activities and self-management as primary treatment methods (NICE 2016). The physiotherapists in the current study seemed to understand the importance of active management

and self-management but at the same time considered reducing pain the main priority for meeting patients' expectations. While the belief in pain management as a primary goal for CLBP patients may initially appear to contradict contemporary therapeutic recommendations, the physiotherapists participating in this study believed reducing pain may help motivate CLBP patients to engage with their treatment programme.

The physiotherapists in the current study appeared to accept and implement components of self-management strategies such as promoting exercise and changing patients' lifestyle and behaviours. These therapists acknowledged the importance of exploring patients' current daily habits and practices and believed doing so could help CLBP sufferers change behaviours that might aggravate their symptoms. In a national physiotherapy survey conducted in Australia, almost 90% of the participants recognized the importance of self-management to enhance patient outcomes (Peek et al. 2016). However, in the same study, physiotherapists estimated that only 67% of their patients have adhered to recommended self-management strategies. Implementing successful self-management approaches thus seems to be a complex process that requires the cooperation of both patients and physiotherapists (Cooper et al. 2009).

The use of a dynamic model is required to understand a complex process (Eppel et al. 2011). Self-management is a dynamic model of care that involves many elements that interact with each other, such as patients, healthcare providers, healthcare policy-makers, family, social, economic and cultural factors. Complexity theory is considered as a potential alternative that provides better understanding of a complex phenomenon (Patton 2011). Patton (2011) emphasised the importance of shifting from focusing on intervention as individual to systematic, using a non-linear and a

linear model. Thus, this new way of system-oriented thinking appears to be more comprehensive, and considers the context, not only the individual intervention or process of change. It appears that complexity theory could enhance the process of developing a dynamic model, such as self-management, in the KSA.

Good communication between physiotherapists and their patients is essential for establishing cooperation (Fu et al. 2016). In the current study, the participating physiotherapists acknowledged the importance of communicating with CLBP patients to understand their needs. However, they tended to prefer being the one to select treatment methods because they believed patients do not have enough knowledge or experience. Furthermore, some of the participants suggested that asking patients about their preferences could negatively affect patient trust and confidence in the physiotherapist's knowledge.

A narrative analysis review of qualitative studies emphasised the importance of patients' participation in goal setting and decision making (Schoeb and Burge 2012). However, the same review reported that both physiotherapists and patients acknowledged there are difficulties in securing patient participation. Factors that may hinder patients' full participation include a physiotherapist's negative attitude towards sharing duties and power, a therapist's limited understanding of a patient's ability and willingness to contribute to decision making and goal setting, a physiotherapist's limited communication skills and a patient's limited understanding of their duties. It therefore seems physiotherapists may adopt a paternalistic approach that negatively affects patients by failing to promote the shifting of power from therapist to CLBP patient, a transfer necessary to enhance patient self-managements skills.

Physiotherapists in the current study emphasised the importance of exercise, which was the most frequently recommended treatment for CLBP management. Previous literature and recent guidelines for CLBP therapy also recommend exercise as essential for low back pain management (Van Middelkoop et al. 2010; NICE 2016). A recent systematic review reported that there is moderate-quality evidence that a multidisciplinary biopsychosocial approach is more effective than conventional care when the goal is enhancing CLBP patients' functional ability and reducing pain, while the evidence that a multidisciplinary biopsychosocial approach is less effective than physical management is of low quality (Kamper et al. 2015). In the current study participants' belief in the effectiveness of exercise for managing CLBP aligns them with recent evidence and guidelines and may indicate that physiotherapy practices in the KSA are beginning to follow evidence-based practice. However, because this finding has been drawn from qualitative data, it is unwise to generalize it to all physiotherapists in the KSA.

Another interesting finding in the current study was that a patient's pain level was the most common outcome measure the physiotherapists used to assess client progress. However, many of the therapist participants considered enhanced function to be the main goal to achieve. The lack of use of a functional outcome measure such as the Roland–Morris disability questionnaire (RMDQ), Oswestry disability index or Quebec Back Pain Disability Scale to assess patient progress could be due to organizational issues or lack of knowledge. Selecting an outcome measure requires considering many factors, including patients' preferences and the amount of time consumed by completing formal assessments, and organizations should regard both as important (Tosteson 2000).

During treatment of patients diagnosed with acute low back pain, most healthcare professionals focus on providing relief from pain and physical impairment (Kent et al. 2009). It seems healthcare professionals need to enhance their adherence to clinical guidelines in terms of diagnosis and treatment of low back pain. Moreover, healthcare policy makers could enhance healthcare quality by introducing local guidelines for low back pain management. Auditing processes and establishing benchmarks within the healthcare system may allow better quality monitoring within various healthcare organizations (Anderson-Miles 1994).

Staying active and engaging in various physical activities was the dominant advice provided by physiotherapists to their CLBP patients in the current study. However, therapist participants revealed concerns about patients' expectations for types of treatment, especially patients' preferences for passive approaches such as rest, massage and modalities. In previous qualitative research, physiotherapists similarly highlighted the conflict between their preferred approach—managing low back pain by empowering patients through use of active treatments and self-management—and patients' passive attitudes towards managing low back pain and expectations for quick fixes (Jeffrey and Foster 2012). Understanding patient beliefs regarding pain management seems to be essential for ensuring successful overall CLBP management, and achieving such understanding requires good communication and a partnership relationship between the healthcare professional and patient (Corbett et al. 2009; Fu et al. 2016).

The role organizations play in enabling physiotherapists to deliver best quality care also was discussed in the current study. Participating physiotherapists were concerned about time shortages and high demands for service, which limited their ability to provide effective patient education and sufficiently supervise patients

performing exercises. Moreover, participants believed that organizations monitoring treatment quality, based their evaluations on numbers of patients treated rather than on the quality of treatment provided. These beliefs suggest that healthcare policy makers and management organizations should adopt a more holistic approach that is patient-centred. Such an orientation may enhance patients' satisfaction and adherence to their management programme (Martin et al. 2005; Robinson et al. 2008), which in turn may reduce both the number of patients seeking additional healthcare services and long-term costs.

A lack of or limited autonomy for physiotherapists was a common concern voiced by therapist participants in the current study. These participants believed absent or restricted autonomy not only limited their ability to provide patients with self-management strategies but also damaged patients' trust and confidence in their physiotherapists' knowledge and clinical skills. A qualitative study conducted in Greece reported similar findings. Physiotherapists in that study cited issues with referral systems and a lack of first point of contact to physiotherapy as specific examples of compromised autonomy (Chanou and Sellars 2010). Participants in the Greek study also believed their limited autonomy negatively affected patients' trust and the overall image of the profession. It appears that from the perspective of physiotherapists, autonomy is a serious issue. The need for a clear scope of practice for physiotherapists in the KSA should be addressed by professional and licensing bodies.

However autonomy is influenced by more than role definitions and regulations. A recent qualitative study in the UK explored osteopaths' beliefs about low back pain guidelines and reported that education and professional identity affected healthcare professionals' attitudes, leading them to reject or underestimate the importance of

adopting low back pain guidelines that experts considered best practice (Figg-latham and Rajendran 2017). Furthermore, a national cross-sectional study conducted in the UK to explore physiotherapists' beliefs and attitudes towards the NICE guidelines (2009) for low back pain assessment and management showed therapists understood the importance of evidence-based practice but believed that implementing the NICE recommendations in clinical practice was unrealistic (Parr and May 2014). Based on the findings of the present study and those in the published literature, future research to explore KSA physiotherapists' beliefs about autonomy and the impact limited autonomy may have on both patients' and physiotherapists' adherence to evidence-based practice is recommended.

Participants in the current study believed personal and social factors such as patient age and fear-avoidance could influence patients' acceptance of and adherence to self-management programmes. The physiotherapists reported that they depended on family support to help them promote exercise and self-management with older CLBP patients. Empirical research supports the important role family and financial support play in encouraging adherence to active management strategies for CLBP (Slade et al. 2009b). However, following a recommended physiotherapy programme appears to be affected by multiple, complex factors, some of which can negatively influence patient adherence. Inhibiting factors may include limited engagement with physical activities in the past, the presence of unhealthy psychological conditions (e.g., anxiety, depression), limited social support, lack of faith, low self-efficacy and higher levels of pain (Jack et al. 2010)

The physiotherapists in the current study seemed to understand the importance of showing sympathy and building trust to overcome patients' frustration and fears about the future. Fear and avoidance of physical activities are considered obstacles

to managing low back pain and may cause disability (Rainville et al. 2011). Thus, considering patient psychology and cognition in addition to physical functioning early during treatment could help prevent transition to a chronic state (Pincus et al. 2002).

Cognitive behavioural treatment is a common management approach used to promote and enhance self-management for low back pain. The utility of this therapeutic approach was supported by a recent systematic review which reported that cognitive behavioural therapy was effective in improving CLBP patients' pain and quality of life and reducing long-term disability (Richmond et al. 2015). However, in the current study, only one therapist was familiar with the concept of cognitive behavioural therapy, and that participant reported being introduced to this therapeutic approach in a continuing professional development training workshop.

The lack of awareness of cognitive behavioural therapy among physiotherapists in the current study may be due to a variety of factors. For example, entry-level qualifications to begin practicing in the field may not include basic training on patient cognition and psychology. The entry-level training degree for physiotherapy is grounded mainly in the biomedical model, which focuses on pathology and anatomy (Foster and Delitto 2011). This foundational theoretical orientation may lead physiotherapists to adopt the biomedical model in clinical practice automatically, without considering the possibility that social, environmental and psychological factors can play a role in CLBP management. It thus appears to be important to introduce the biopsychosocial model in entry-level training as well as in programmes for postgraduate degrees and continuing professional development to enhance physiotherapists' awareness and adoption of a more comprehensive management approach.

In the present study, physiotherapists showed understanding and recognized the importance of promoting self-management as a primary method to help patients cope with CLBP. However, these participants seemed to focus on prescribing exercise and emphasised their patients' responsibility to change their behaviour and adopt more active lifestyles. They seemed less aware that helping patients change their behaviour requires considering factors that may prevent those changes. A recent qualitative study reported that after attending a cognitive training programme, participating physiotherapists believed their understanding of the influences on pain of social and psychological factors was improved, which led them to adopt a biopsychosocial approach to CLBP patient management (Synnott et al. 2016). That the current study's therapist participants appeared to lack awareness of behavioural factors that impede patient change again argues for the importance of providing cognitive behavioural therapy training at all levels of physiotherapy education.

Many papers based on the behavioural model have been published describing ways to enhance patients' self-efficacy, but none of the physiotherapists in the current study discussed them (Strecher et al. 1986; Rosenstock et al. 1988). A longitudinal study which investigated the impact self-efficacy and fear of movement had on pain and disability reported that both fear of movement and self-efficacy partly mediated pain intensity at the onset of CLBP, but only self-efficacy helped mediate pain in the long term (Costal et al. 2011). It seemed that physiotherapists in the current study had a limited understanding of the theoretical basis of self-management and the behaviour change model, which was reflected in part in the lack of conversation about enhancing patient self-efficacy. Thus, physiotherapists limited understanding of the theoretical basis of self-management may be due to the availability of various definitions of the concept self-management that may have restricted the clarity of the

concept among participants in the current study (Ryan and Sawin 2009; Grady and Gough 2014).

Enhancing patient education also was discussed in the current study. Participants suggested using various methods to improve patient education, including using visual materials and smartphones. Providing an online or telephone-based self-management support service may help promote and enhance CLBP patients' self-management skills. A qualitative study that explored CLBP patients' experiences with a patient-centred website found their ability to access such support resulted in positive attitudes towards and improvement of their self-management skills (Caiata Zufferey and Schulz 2009). However, physiotherapists should consider patients' personal preferences for educational methods. Further study is required to explore both patients' and physiotherapists' beliefs about, acceptance of, and the feasibility of introducing online and telephone-based self-management support services in the KSA.

6.8 Conclusions

A limited number of studies have explored physiotherapists' perceptions of self-management with low back pain patients (Monaghan 2015). The current study has enhanced understanding of physiotherapists' perceptions of self-management for CLBP patients within Arabic culture, in particular, in the Kingdom of Saudi Arabia. The physiotherapists in this study acknowledged the importance of self-management strategies that included exercise, advice and behaviour change. However, many therapist participants emphasised exercise and advice as primary methods of self-management rather than behaviour change. Moreover, these physiotherapists tended to hold a paternalistic attitude towards the role of the patient in decision

making, perhaps due to the influence of the biomedical model underpinning the KSA healthcare system.

Understanding patients' beliefs and attitudes about self-management is important to ensure their needs and expectations are met. Further discussion of patients' and physiotherapists' perceptions of self-management will be presented in chapter seven. Examining these stakeholders' perceptions together can help identify points of agreement and disagreement regarding expected methods of care and barriers to successful self-management programmes. The clinical implications of the current study, potential future research, and overall conclusions also will be discussed.

7. Chapter Seven: Discussion and Conclusion

7.1 Introduction

This chapter presents and discusses the findings of this research project on elucidating current physiotherapy management in the KSA for CLBP, including self-management; moreover, it delineates future research priorities in the KSA to enhance quality of physiotherapy services for CLBP. This research project is the first study conducted in the KSA to explore physiotherapy management for CLBP quantitatively in combination with qualitative studies on patients' and physiotherapists' understandings and perceptions of self-management. After highlighting the main findings and comparing points of agreement and disagreement between patients' and physiotherapists' views in terms of the shape of physiotherapy care, the current physiotherapy practice in the KSA is compared to recent evidence-based practice. This helps the researcher to make recommendations for future research. Clinical and professional, policy, organisational and educational recommendations are considered with a view to enhancing the quality of care. Research limitations and alternative methods to enhance quality are also mentioned in this chapter.

7.2 Self-management as a model of care in the KSA

The core elements that any model of care are expected to consider include patient-centredness, evidence-based practice, the promotion of equality and access to services, cost effectiveness, standardised care and monitoring through outcome measures (ACI 2013). The current research findings may contribute to establishing awareness of the applicability and acceptance of self-management as a model of care in the Saudi context for patients with CLBP.

Self-management is an evolving concept, and researchers have contributed to reshaping its definition during the past 20 years, as presented in Chapter One. The Medical Research Council considers the first stage in developing an intervention for a complex condition as being the achievement of a clear definition of the intervention (MRC 2006). It appears important to identify the main elements of the self-management concept and provide a new definition based on previous literature and on the findings of the current project. In future, this could help researchers and policy-makers in the KSA to develop a framework of care for chronic conditions.

The most important finding in this research project is that the lack of a patient-centred approach could be an essential element in the limited understanding of the concept of self-management, irrespective of its implementation and promotion. In qualitative studies, many physiotherapists tend to prefer not to share treatment-related decision-making with their patients. However, it is important to promote sharing responsibility and power between patients and therapists to achieve successful management of chronic conditions (Cramm and Nieboer 2014).

The current research made it clear that physiotherapists have a limited understanding of self-management as a concept; most of them consider it to consist of exercise and changing some activities. Self-management is an approach that not only promotes an active lifestyle, but is also actually based on problem-solving and coping with various; physical, emotional, psychological aspects of challenges, which accompany the chronic condition, on a daily basis, (Lorig and Holman 2003).

Moreover, greater awareness of key concepts related to self-management self-efficacy that focus on an individual's confidence in their ability to perform a particular behaviour to accomplish a certain task, is required among physiotherapists

(Bodenheimer et al. 2002). This may enhance the effectiveness of self-management and achieve the desired goal.

Previous studies and the findings of the current research project show that self-management can be defined as model of care that adopts patient-centric strategies to promote patient independence, via their healthcare provider, as well as community and family support, and provide patients with skills that enable them to manage symptoms, as well as the psychological, social, cultural, economic and spiritual consequences of their chronic condition.

The findings of the present research have emphasised the importance of communication as a primary factor in the patient-physiotherapist relationship. This confirmed a previous model that considered achieving effective communication between patients and practitioner as a fundamental component in accomplishing a partnership that ultimately enhances patients' self-management ability (Fu et al. 2016).

Furthermore, multiple dimension factors are considered to influence the partnership relationship between patients and healthcare professionals, such as (1) a patient component, which includes patient belief, involvement in decision-making and day-to-day circumstances; (2) a healthcare professional component, which consists of healthcare professional belief, emotional support, education, individual care and healthcare service, and these have also been reported in the present research project and in the Fu model (Fu et al. 2016).

The influence of patient belief, with regard to the patient- healthcare professional relationship in the present research project was highlighted in both qualitative studies. Many patients prefer to adopt a passive approach towards being involved in

decision-making, and tend to delegate this role to their physiotherapist. However, many physiotherapists appear to show no interest in sharing treatment choices with their patients. This may explain the limited level of understanding and implementation of a patient-centred approach that was observed in the current study. However, sharing responsibility is crucial in empowering patients and encouraging them to take an active role in the management of their chronic condition.

The healthcare professional attitude towards patient education appears to be limited to advice, rather than providing patients with skills that help them adopt a problem-solving approach. This may be due to physiotherapists' limited familiarity with the CBT concept and other cognitive and behavioural theories that emphasise cognitive and behavioural techniques, such as problem-solving skills. A limited understanding of self-management and excessive use of passive treatment among participants in this research project was revealed using the model developed by Fu et al. (2016) model, which considers that healthcare professionals believe that attitude and self-management strategies are the main factors of a healthcare professional's role in establishing a partnership that ultimately improves patients' self-management performance.

However, it is interesting to find that culture could have influenced the current findings. For example; family support and involvement appear to enhance patients' engagement with treatment. Moreover, older patients, in particular, prefer passive treatment, and have a negative attitude towards adhering to active treatment, such as exercise. It appears important to add a third social and cultural dimension to the model developed by Fu et al. (2016), in addition to the healthcare professional role and the patient role. The reason this model has not received sufficient emphasis in society and culture is that most of the studies that have explored patient and

healthcare professional relationships have been conducted in developed Western countries, which have social and cultural aspects that are different from those of the KSA.

Patients seem to expect and prefer more passive treatment methods, such as medications, physiotherapy modalities and massage. In the quantitative study, it was found that physiotherapists consider exercise and advice to be the most common treatments for CLBP. This was consistent with the qualitative study finding that highlighted the importance of exercise and advice, such as changing their lifestyle, to help patients with CLBP in managing their symptoms. However, physiotherapists reported excessive use of passive treatments, such as hot packs and electrotherapy, and there is limited or no evidence supporting the effectiveness of these treatments (Airaksinen et al. 2006; Pillastrini et al. 2012). This may be due to the lack of local guidelines on CLBP management. Indeed, many physiotherapists reported that no local guidelines or protocols were used in their organisations. This may explain the extensive use of modalities that are not recommended in the most recent NICE guidelines for LBP (NICE 2016). However, the high use of these modalities for treating patients with CLBP may have been found because most of the physiotherapists who participated in the survey worked in public healthcare settings, which usually serve large populations. These modalities may allow physiotherapists to treat more patients at once. It seems that to adopt and adhere to CLBP guidelines and recent evidence, physiotherapists need organisational support to promote evidence-based practice.

In the qualitative study, physiotherapists reported that they were criticised by senior staff and management if they spent more than 30 minutes with patients. In the quantitative study, 71.3% of participants described the length of a normal

physiotherapy session as 30–45 minutes. Moreover, some physiotherapists reported that the quality monitoring in some healthcare settings is based on the number of patients treated by physiotherapists. This finding suggests that without organisational cooperation, it is difficult to promote self-management and evidence-based practice, even if physiotherapists recognise the importance of guidelines and evidence in their work. A previous study suggested that physiotherapists recognise the importance of guidelines but perceive that they do not have enough time to implement the guidelines in their busy daily practice (Parr and May 2014). Therefore, it is extremely important to consider the perspectives of physiotherapists, patients and other healthcare professionals before developing any local guidelines for LBP management.

Undergraduate education could also be related to the use of treatment methods that lack evidence, as a previous study in Kuwait showed (Al-Enezi and May 2017). It seems that education may influence physiotherapists to adopt certain management methods. The current study showed associations between attending particular CPD courses, such as Maitland and Mulligan courses, and the use of these techniques in clinical daily practice. Previous studies highlighted the importance of postgraduate training to ensure healthcare professionals understand the current best evidence (Alsop 1997; Cusick and McCluskey 2000). This may ultimately enhance the delivery of evidence-based healthcare services.

Many physiotherapists reported using CBT in quantitative studies. However, in the qualitative studies, few physiotherapists were able to discuss the concept. Only one participant had attended a CBT CPD workshop. It appeared that the physiotherapists in the current study had a limited understanding of the theoretical basis of self-management and the behaviour change model, which was reflected, in part, in the

lack of awareness of the concept of CBT in the qualitative study. It was clear that the majority of the physiotherapists had mostly attended CPD training that promoted specific physiotherapy techniques compared with CPD courses based on clinical reasoning and the critical appraisal of evidence. This may explain the limited awareness of self-management as a concept among physiotherapists, which only involved exercises and 'dos and don'ts' lists in the sample.

Physiotherapists in the quantitative study reported reduced pain as the primary goal in the treatment of CLBP patients. In addition, most physiotherapists in the qualitative studies considered decreased pain as the primary objective in treating patients with CLBP because it is the patients' priority. This may explain the frequent using of pain-focussed outcome measure when treating patients with CLBP in the KSA. However, adopting and using specific outcome measures may be influenced by various factors, such as resources, awareness, time and the organisation to which the physiotherapist belongs (Stokes and Stokes 2008; Duncan and Murray 2012). Thus, it seems important to increase physiotherapists' consideration of improved function as the primary goal for patients with CLBP and adopt functional outcome measures, such as the Oswestry Low Back Pain Scale, Roland Morris Disability Questionnaire and Quebec Back Pain Disability Scale. Research has reported that healthcare professionals' perceptions and behaviour in terms of treatment could influence patients' attitude and beliefs concerning management (Darlow et al. 2012).

Therefore, if physiotherapists view function as the primary goal for patients with CLBP and adopt a functional outcome measure, it may help motivate CLBP patients to engage with their treatment programme and focus on improving function. Because

assessing pain is a highly subjective opposite compared to function, it may be easier for patients to recognise progress when focussing on function.

Some patients preferred specific treatment methods based on previous experience. For example, some patients with CLBP trusted the effectiveness of certain passive treatments methods, based on personal experience or suggestions from friends or family, although recent evidence has shown that they have limited or no effectiveness. This highlights the conflict between the patients' and physiotherapists' perceptions concerning the most effective methods for managing CLBP.

Interestingly, most patients tended to adopt a passive approach when it came to engaging in decision making for selecting treatments. Patients perceived that physiotherapists have more knowledge and experience, which enables them to design the best treatment programmes for patients. Therefore, it seems that patients with CLBP in the KSA could accept self-management as the primary management method if they received enough information and education from physiotherapists. Moreover, cooperation with other healthcare professionals is essential to successfully promote self-management; for example, in the qualitative study, some patients seemed to trust and value physicians' opinions more than those of physiotherapists concerning treatments. Some physiotherapists also perceived that their clinical judgment may not always be appreciated by doctors and patients. Thus, it appears to be important for healthcare policymakers in KSA to publish a physiotherapy code of practice to define the scope of physiotherapists' practice and emphasise the inclusion of multidisciplinary teams.

7.3 Research limitations

The main research limitation in the quantitative stage was the lack of random sampling that included all registered physiotherapists; such sampling could not be conducted for practical reasons, as discussed in chapter four. This limited the generalisability of the current research project. However, the purpose of the current study was to explore the phenomena rather than measuring or assessing relationship. Thus, the findings of the quantitative research seem to be useful in terms of providing more information on the current physiotherapy practice for patients with CLBP as a first stage in helping the researcher to understand the shape of physiotherapy services and prepare for the subsequent qualitative studies. Moreover, the quantitative study highlighted the importance of developing an up-to-date list of registered physiotherapists and healthcare professionals in general. This may facilitate conducting randomised sampling in future, thereby improving the quality of research and enhancing the generalisability of the findings to a larger population. In addition, data is collected on the basis of physiotherapists' opinions and dependent on their memory. This may lead to recall bias and inaccurate results.

In the qualitative section focussing on patients, the main limitation was that only one female agreed to participate. This could have influenced the research findings due to the possible gender effects of different experiences. Regardless, the researcher considered the local culture in advance and stated clearly in the information sheet that female patients would be interviewed in the presence of family members. It seems that future qualitative research will need to consider developing a team of male and female researchers. It may enhance female participation if a female researcher were to conduct interviews.

Another limitation was that the qualitative section was conducted in one city. Jeddah is considered the second largest city in the country and the economic hub. This means that the quality and number of healthcare services offered may differ compared with a smaller city. Therefore, patients' experiences could be different between those treated in large and small cities. Moreover, there is usually less access to educational materials and CPD training in small cities. This may affect the perception of physiotherapy, as well as awareness of recent evidence and guidelines concerning CLBP management in general and self-management in particular. In the first stage, the researcher considered conducting the research in two cities; however, for practical reasons, such as the need to make multiple visits to each healthcare setting while preparing for the interviews and the necessity of rescheduling interviews for non-attending patients, this was not feasible with the limited time and resources available.

7.4 Clinical and professional recommendations

The clinical and professional recommendations stemming from this study are as follows:

- It is necessary to promote evidence-based practice for treating patients with CLBP. This requires a comprehensive understanding of clinical reasoning and critical research;
- There should be enhanced awareness of empowering and sharing responsibility of care with patients via promoting self-management for managing patients with CLBP;

- Communication is the essential element for building a patient–physiotherapist relationship that will help to empower patients to adopt self-management through providing patients with information and skills that require problem-solving strategies;
- It is necessary to promote patient-centred services; this requires enhancing communication and providing information and education; and
- It is important to enhance access and follow-up methods for patients with CLBP by using alternatives, such as telephone and online physiotherapy services.

7.5 Recommendations for policymakers, organisation managers and educators

Recommendations for policies, organisations and education are as follows:

- Local LBP guidelines should be published in both Arabic and English based on recent evidence and considering local culture. Considering the views of multiple stakeholders, such as patients, healthcare professionals, patients' family, management and healthcare policymakers, seems to be essential in developing and adhering to LBP guidelines;
- The development of clinical reasoning and research culture among physiotherapists should be encouraged;
- Quality monitoring and audits should be carried out for physiotherapy services based on patient-centred care that considers patients' preferences and beliefs;
- Physiotherapy standards and codes of practice should be developed that describe the roles and responsibilities of physiotherapists, as well as their scope of practice;
- A standard functional outcome measure should be used to assess the progress of patients with CLBP progress;

- CPD training should include training in searching databases, critical appraisal and clinical reasoning;
- A multidisciplinary biopsychosocial model approach should be delivered that addresses patients' physical, psychological and social characteristics and needs. A multidimensional approach seems to be important in managing chronic conditions, such as CLBP. This model may help patients to adopt self-management methods;
- Evidence-based practices should be taught at the entry training level;
- Healthcare organisations should be responsible for creating a professional culture that endorses and expects evidence-based practice. This can be accomplished by providing access to databases, journals and training.

7.6 Future research recommendations

The recommendations for future research identified in this study are as follows:

- Future research is required to investigate physiotherapists' awareness of evidence-based practice concerning the assessment and treatment of patients with CLBP. Furthermore, it is necessary to explore factors that could influence physiotherapists' adherence to LBP guidelines in the KSA;
- The influence of physiotherapists' autonomy should be explored in term of assessment and treatment when evaluating the progress of patients with CLBP. Moreover, qualitative research should be carried out to explore patients' and physiotherapists' perceptions of the shape and effect of physiotherapists' autonomy concerning patients' in physiotherapists;

- Further research should be carried out to investigate cost effectiveness and any potential barriers that may limit the use of CBT for patients with CLBP in the KSA. Qualitative studies to explore patients' and physiotherapists' perceptions of the utility of CBT should also be considered; and
- The importance of family involvement in CLBP patients' management was acknowledged by both physiotherapists and patients in this research projects. Thus, it is recommended that future research should explore the effects of family support on the adherence to self-management programmes of patients with CLBP.

7.7 Conclusion

In the current study, the physiotherapists acknowledged the importance of exercise and advice. Moreover, these represented the most common treatment methods used in daily practice. However, patients' preferences for passive approaches, such as rest, massage and modalities were frequently reported. This shows conflict between physiotherapists and patients with CLBP in terms of the preferred approach for managing the disorder. It seems essential for physiotherapists to understand patients' perceptions in terms of preferred treatments and pain management. This may foster the success of overall CLBP management and adopting self-management in particular. Achieving such an understanding requires good communication and a partnering relationship between the physiotherapists and patients.

Physiotherapists' extensive use of modalities where evidence for their effectiveness was lacking or insufficient was a common practice for physiotherapy management in patients with CLBP in the current research project. Moreover, physiotherapists and patients showed limited understanding of self-management as a concept. Most

physiotherapists seemed to focus on exercise and general advice, such as work-related and posture changes, rather than empowering patients and providing them with skills to help them develop a problem-solving mentality. Such a practice may have led patients to adopt and prefer more passive approaches in the current study.

Practical daily challenges may facilitate or inhibit the promotion of self-management by physiotherapists because of the lack of time and high demand in physiotherapy services. Moreover, restricted or limited autonomy of physiotherapists seems to have a negative effect on their ability to promote self-management among patients with CLBP. Thus, it is essential to introduce multidisciplinary teams into healthcare settings and define each healthcare profession's scope of practice. A multidisciplinary team could help to deliver a comprehensive model of care that considers patients' physical, psychological and social characteristics and needs.

Promoting self-management in daily physiotherapy practice appears to be complex issue. It involves various factors, such as promoting an evidence-based practice culture among physiotherapists; a patient-centred approach; access to guidelines and evidence; and organisational support through developing policy, local guidelines and CPD training. This research presents a platform of recommendation for future researchers, professionals, educators and policymakers to enhance the quality of care for patients with CLBP in the KSA.

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Appendix 1. Ethical approval and letter of Support.



Date 05.11.2015

Research proposal number: 2015-6/HWB-HSC-12

Dear Ahmed ADEM

Exploring self-management of chronic low back pain in Saudi Arabia

This proposal was submitted to the Faculty Research Ethics Committee with a standard SHREC1 form. I have reviewed the form and additional documents and have added it to the register of projects and given a reference number (as above). You do not need any further review from the Ethics Committee. You will need to ensure you have all other necessary permission in place before proceeding, for example, from the Research Governance office of any sites outside the University where your research will take place. This letter can be used as evidence that the proposal has been reviewed within Sheffield Hallam University.

The documents reviewed are amalgamated in a file

ADEM N2015Binder1.pdf

Good luck with your project.

Yours sincerely

A handwritten signature in black ink that reads 'Peter Allmark'.

Peter Allmark
Chair Faculty Research Ethics Committee
Faculty of Health and Wellbeing
Sheffield Hallam University
32 Collegiate Crescent
Sheffield
S10 2BP
0114 224 5727
p.allmark@shu.ac.uk

Centre for Health and Social Care Research
Faculty of Health and Wellbeing | Montgomery House | 32 Collegiate Crescent | Sheffield | S10 2BP | UK
Telephone +44 (0) 114 225 5854 | Fax +44 (0) 114 225 4377
chscr@shu.ac.uk | www.shu.ac.uk/chscr

Appendix 1. Ethical approval and letter of Support.



Research invitation

Date: 22 / 06 / 2015

To the president of Saudi Physical Therapy Association,

Ahmed Abdelkadir is a PhD degree student at the Centre for Health and Social Care Research, at Sheffield Hallam University in the United Kingdom. He is a qualified physiotherapist. He is conducting research to investigate the current physiotherapy practices used for the management of low back pain in Saudi Arabia. Furthermore he wants to explore both patients' and physiotherapists' perceptions of self-management in relation to chronic low back pain management. Data collection will start after receiving ethical approval from Sheffield Hallam University Faculty Research Ethics Committee and local hospital approval.

Would you please give him approval to collect data at your site in order that he can undertake his research under the title: "**Exploring Self-management of Chronic Low Back Pain in Saudi Arabia**".

Once approval has been gained the research work will be done in the following way:

- Physiotherapists will be invited by SPTA to complete the online questionnaire via e-mail.

Yours sincerely,

A handwritten signature in black ink, appearing to read "S. May".

Dr. Stephen May
Centre for Health and Social Care Research
Sheffield Hallam University
Sheffield, S10 2 BP
UK

s.may@shu.ac.uk

Appendix 1. Ethical approval and letter of Support.

Participation application

Organization:	Saudi Physical Therapy Association
Name :	Khaled Solaibeekh Almodhaibri
Tel:	966112825214
email:	President@spta.org.sa
Fax:	966114786100 ext: 7550

I have read the invitation letter and would be happy to support and participate in this research project under the title: "**Exploring Self-management of Chronic Low Back Pain in Saudi Arabia**". This approval will be valid after receiving ethical approval from Sheffield Hallam University.

I give my consent to participate in this study.

Participant's signature almodhaibri Date: 05-08-2015

Please return completed Application to the address below.

This can be sent electronically at ahmed.a.adem@student.shu.ac.uk

Fax: +441142270253 or by post to the **below address.**

C/O AHMED ABDELKADIR ADEM

Appendix 2. Participant Information sheet (quantitative section).

Study title: Exploring Self-management of Chronic Low Back Pain in Saudi Arabia.

1. What is the purpose of the study?

The aim of the current study is to explore current physiotherapy practices used for the management of chronic low back pain (CLBP) in the Kingdom of Saudi Arabia (KSA). This will help the researcher to identify physiotherapists' levels of familiarity with self-management concepts and their elements.

2. How could this study improve the quality of care?

This project could help to improve the understanding of the influence of various factors, such as culture and social factors, on adopting self-management in musculoskeletal physiotherapy within a Saudi context among CLBP patients and physiotherapists in KSA. The findings of this study may help local policymakers develop guidelines that adopt more holistic health approaches (the biopsychosocial model) and may also improve treatment outcomes and economic efficiency.

3. Why Me?

Physiotherapists who work in the KSA will be invited to participate in the study by Saudi Physical Therapy Association (SPTA).

4. What will happen?

Physiotherapist will have the choice of completing the questionnaire online. If participants face any difficulties with understanding or need more information, they should contact the main researcher before or after giving their consent and completing survey. The researcher's contact details such as email, mobile number and postcode are provided at the end of this information sheet.

5. Where will this study be conducted?

The survey will be conducted online. The estimated time to complete the survey is 15 minutes.

6. Should I participate in this study?

All Physiotherapists have right to accept or refuse participation in this study. Participation in this study is completely voluntary.

7. What if I refuse to participate in this research?

Participation or non-participation will not have any impact on your career. Participation in this study is completely voluntary.

8. What if I want withdraw from the study after giving my consent?

Participants have the right to withdraw from the research even after giving their consent at any time without giving any reasons.

9. What are the benefits of participation?

There is no financial or personal benefit from participation. However, your participation will help researchers and physiotherapists to understand CLBP patients' needs and expectations from physiotherapy, which could help to deliver a patient-centred service and could lead to improving the quality of physiotherapy services in the KSA.

10. What are the risks for the participants in the study?

Many factors have been considered such as participants safety, privacy, local organisations and country regulations to prevent any risk to the participants of this study.

11. If participants have a complaint, where should they go?

If you have any concerns or inquiries, you can contact the address below. In addition, participants can contact the local authority and raise his/her complaint based on the law in the KSA. Supervisory team: Dr.Stephen May, Email: s.may@shu.ac.uk , Dr.Karen Kilner, Email: K.Kilner@shu.ac.uk

12. How will researchers protect my confidentiality (privacy)?

All participant data (both hardcopy and softcopy) will be kept in a secure place. Electronic participant data s will be saved in a secure laptop protected with a password. Paper-based documents will be kept in a secure locker. The consent form will be kept for four years in a secure place.

13. Who will have access to my data?

Only authorised people such as the supervisory team or the research ethics committee will have access to your data including the consent form. This is to monitor the researcher's commitment to the research plan and ethical consideration.

14. What will happen after finishing this study?

After discussing the results of this study with the supervisory team, the researcher will publish the study results in a journal. All data will be published anonymously. Participants will be provided with a summary of study results if they are interested.

15. Was this study reviewed?

Yes, this research is approved by the research ethics committee at Sheffield Hallam University.

16. Who is the sponsor of this research?

This study will be sponsored by Sheffield Hallam University, United Kingdom.

17. For further information, please contact the researcher. Contact details:

Mr. Ahmed Adem (PhD candidate)
Centre for Health and Social Care Research
Sheffield Hallam University
Chestnut Court
Collegiate Crescent
Sheffield
S10 2BP
Mobile-KSA:
Mobile-UK:
E-mail: ahmed.a.adem@student.shu.ac.uk

Thank you.

Appendix 2. Consent form (Physiotherapists)

Study title: Exploring Self-management of Chronic Low Back Pain in Saudi Arabia. Please read the following statements and *tick the box* to show that you agree with and understand the statements below.

1. I confirm that I have read and understood the information sheet and the study was explained to me in detail. Furthermore, all my questions have been answered to my satisfaction and I understand that I can ask any question at any stage.

2. I understand that participation in this study is a completely voluntary decision. In addition, participation or non-participation will not have any impact on my career, and I will not receive any financial, transport support or personal benefits from participation in this study.

3. I understand and agree with the way that my data will be managed and protected in this study as reported in the information sheet; for instance, only anonymised data and quotations will be published. Moreover, only authorised people such as the supervisory team or research ethics committee will have access to my data including the consent form.

4. I understand that I can withdraw from the study after giving my consent at any time without giving any reasons.

4. I agree to participate in this study.

Participant's Name Date Signature
.....

For further information, please contact the researcher. Contact details:

Mr. Ahmed Adem (PhD candidate)
Centre for Health and Social Care Research
Sheffield Hallam University
Chestnut Court
Collegiate Crescent
Sheffield
S10 2BP
Mobile-KSA:
Mobile-UK:
E-mail: ahmed.a.adem@student.shu.ac.uk

Appendix 3.1 Participant Information sheet (qualitative section - Patients).

Study title: Exploring Self-management of Chronic Low Back Pain in Saudi Arabia.

1. What is the purpose of the study?

The aim of the current study is to explore both patients' and physiotherapists' perceptions of self-management in relation to chronic low back pain (CLBP) management in Saudi Arabia (KSA) and explore patients' beliefs, expectations and satisfaction levels regarding physiotherapeutic management of CLBP, specifically through self-management.

2. How could this study improve the quality of care?

Patients

This study will explore the perceptions of self-management from both patients and healthcare providers in order to help deliver a patient-centred service in future that is ensured to address and tailor patients' need individually.

Health care provider and health policy maker

This project could help to improve the understanding of the influence of various factors, such as culture and social factors, on adopting self-management in musculoskeletal physiotherapy within a Saudi context among CLBP patients and physiotherapists in KSA. The findings of this study may help local policymakers develop guidelines that adopt more holistic health approaches (the biopsychosocial model) and may also improve treatment outcomes and economic efficiency.

3. Why Me?

Patients 18 years or older presenting with CLBP in the Physiotherapy Department will be invited to participate in the study by their physiotherapists.

4. What will happen?

Participants will be interviewed face-to-face by the researcher and all interviews will be recorded. The interview will include several questions related to the patient's experience, needs, expectations and satisfaction concerning physiotherapy management for CLBP. Answering those questions will help the researcher to better understand the factors that may influence patient satisfaction and adherence to physiotherapy management for CLBP. Participants will have enough time to ask questions before and after the interview.

5. Where will this study be conducted?

All interviews will take place in a hospital and the time will be arranged depending on the patient's convenience. The estimated time for the interview is 25 minutes. Patient safety and confidentiality will be considered. To ensure the recruitment process is culturally sensitive, female participants will be interviewed with a family member in attendance.

6. Should I participate in this study?

All patients have right to accept or refuse participation in this study. Participation in this study is completely voluntary.

7. What if I refuse to participate in this research?

Participation or non-participation will not have any impact on your standard healthcare. Participation in this study is completely voluntary.

8. What if I want withdraw from the study after giving my consent?

Participants have the right to withdraw from the research even after giving their consent at any time without giving any reasons.

9. What are the benefits of participation?

There is no financial, transport support or personal benefits from participation. However, your participation will help researchers and physiotherapists to understand CLBP patients' needs and expectations from physiotherapy, which could help to deliver a patient-centred service and could lead to improving the quality of physiotherapy services in the KSA.

10. What are the risks for the participants in the study?

Many factors have been considered such as patient safety, privacy, local organisations and country regulations to prevent any risk to the participants of this study.

11. If participants have a complaint, where should they go?

If you have any concerns or inquiries, you can contact the address below. In addition, participants can contact the local authority and raise his/her complaint based on the law in the KSA. Supervisory team: Dr.Stephen May, Email: s.may@shu.ac.uk
Dr.Karen Kilner, Email: K.Kilner@shu.ac.uk

12. How will researchers protect my confidentiality (privacy)?

All participant data (both hardcopy and softcopy) will be kept in a secure place. Electronic participant data such as audio records and transcripts will be saved in a secure laptop protected with a password. Paper-based documents will be kept in a secure locker. Participants' contact details in the registration form will be erased once the participants' have attended the interview. The consent form will be kept for four years in a secure place.

13. Who will have access to my data?

Only authorised people such as the supervisory team or the research ethics committee will have access to your data including the consent form. This is to monitor the researcher's commitment to the research plan and ethical consideration. Moreover, other researchers may have access to your anonymised transcripts to analyse the results.

14. What will happen after finishing this study?

After discussing the results of this study with the supervisory team, the researcher will publish the study results in a journal. All data will be published anonymously. Participants will be provided with a summary of study results if they are interested.

15. Was this study reviewed?

Yes, this research is approved by the research ethics committee at Sheffield Hallam University.

16. Who is the sponsor of this research?

This study will be sponsored by Sheffield Hallam University, United Kingdom.

17. For further information, please contact the researcher. Contact details:

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Mobile-UK:
E-mail: ahmed.a.adem@student.shu.ac.uk

Thank you.

Appendix 3.1. Consent form (Patients)

Study title: Exploring Self-management of Chronic Low Back Pain in Saudi Arabia. Please read the following statements and *tick the box* to show that you agree with and understand the statements below.

1. I confirm that I have read and understood the information sheet and the study was explained to me in detail. Furthermore, all my questions have been answered to my satisfaction and I understand that I can ask any question at any stage.

2. I understand that participation in this study is a completely voluntary decision. In addition, participation or non-participation will not have any impact on my standard healthcare, and I will not receive any financial, transport support or personal benefits from participation in this study.

3. I understand and agree with the way that my data will be managed and protected in this study as reported in the information sheet; for instance, only anonymised data and quotations will be published. Moreover, only authorised people such as the supervisory team or research ethics committee will have access to my data including the consent form.

4. I understand that I can withdraw from the study after giving my consent at any time without giving any reasons.

4. I agree to participate in this study.

Participant's Name Date Signature
.....

For further information, please contact the researcher. Contact details:

Mr. Ahmed Adem (PhD candidate)
Centre for Health and Social Care Research
Sheffield Hallam University
Chestnut Court
Collegiate Crescent
Sheffield
S10 2BP

Mobile-KSA:
Mobile-UK:
E-mail: ahmed.a.adem@student.shu.ac.uk

Appendix 3.2. Participant Information sheet (qualitative section - Physiotherapists).

Study title: Exploring Self-management of Chronic Low Back Pain in Saudi Arabia.

1. What is the purpose of the study?

The aim of the current study is to explore both patients' and physiotherapists' perceptions of self-management in relation to chronic low back pain (CLBP) management in Saudi Arabia (KSA) and explore patients' beliefs, expectations and satisfaction levels regarding physiotherapeutic management of CLBP, specifically through self-management.

2. How could this study improve the quality of care?

Patients

This study will explore the perceptions of self-management from both patients and healthcare providers in order to help deliver a patient-centred service in future that is ensured to address and tailor patients' need individually.

Health care provider and health policy maker

This project could help to improve the understanding of the influence of various factors, such as culture and social factors, on adopting self-management in musculoskeletal physiotherapy within a Saudi context among CLBP patients and physiotherapists in KSA. The findings of this study may help local policymakers develop guidelines that adopt more holistic health approaches (the biopsychosocial model) and may also improve treatment outcomes and economic efficiency.

3. Why Me?

Physiotherapists who have two or more years of clinical experience with the musculoskeletal system and one year work experience in the KSA will be invited to participate in the study by the head physiotherapist.

4. What will happen?

The researcher will interview you in a face-to-face interview and record your perceptions and understanding of self-management through several questions. Your answers to those questions will help the researcher to better understand the factors that may influence adopting self-management in musculoskeletal physiotherapy practice in KSA. Participants will have enough time to ask questions before and after the interview.

5. Where will this study be conducted?

All interviews will take place in hospital and the time will be arranged depending on the physiotherapists and hospital management convenience. The participant's safety and confidentiality will be considered.

6. Should I participate in this study?

All Physiotherapists have right to accept or refuse participation in this study. Participation in this study is completely voluntary.

7. What if I refuse to participate in this research?

Participation or non-participation will not have any impact on your career. Participation in this study is completely voluntary.

8. What if I want withdraw from the study after giving my consent?

Participants have the right to withdraw from the research even after giving their consent at any time without giving any reasons.

9. What are the benefits of participation?

There is no financial, transport support or personal benefits from participation. However, your participation will help researchers and physiotherapists to understand CLBP patients' needs and expectations from physiotherapy, which could help to deliver a patient-centred service and could lead to improving the quality of physiotherapy services in the KSA.

10. What are the risks for the participants in the study?

Many factors have been considered such as participants safety, privacy, local organisations and country regulations to prevent any risk to the participants of this study.

11. If participants have a complaint, where should they go?

If you have any concerns or inquiries, you can contact the address below. In addition, participants can contact the local authority and raise his/her complaint based on the law in the KSA. Supervisory team: Dr.Stephen May, Email: s.may@shu.ac.uk
Dr.Karen Kilner, Email: K.Kilner@shu.ac.uk

12. How will researchers protect my confidentiality (privacy)?

All participant data (both hardcopy and softcopy) will be kept in a secure place. Electronic participant data such as audio records and transcripts will be saved in a secure laptop protected with a password. Paper-based documents will be kept in a secure locker. Participants' contact details in the registration form will be erased once the participants' have attended the interview. The consent form will be kept for four years in a secure place.

13. Who will have access to my data?

Only authorised people such as the supervisory team or the research ethics committee will have access to your data including the consent form. This is to monitor the researcher's commitment to the research plan and ethical consideration. Moreover, other researchers may have access to your anonymised transcripts to analyse the results.

14. What will happen after finishing this study?

After discussing the results of this study with the supervisory team, the researcher will publish the study results in a journal. All data will be published anonymously. Participants will be provided with a summary of study results if they are interested.

15. Was this study reviewed?

Yes, this research is approved by the research ethics committee at Sheffield Hallam University.

16. Who is the sponsor of this research?

This study will be sponsored by Sheffield Hallam University, United Kingdom.

17. For further information, please contact the researcher. Contact details:

Mr. Ahmed Adem (PhD candidate)
Centre for Health and Social Care Research
Sheffield Hallam University
Chestnut Court
Collegiate Crescent
Sheffield
S10 2BP

Mobile-KSA:

Mobile-UK:

E-mail: ahmed.a.adem@student.shu.ac.uk

Thank you.

Appendix 3.2 Consent form (Physiotherapists)

Study title: Exploring Self-management of Chronic Low Back Pain in Saudi Arabia.
Please read the following statements and *tick the box* to show that you agree with and understand the statements below.

1. I confirm that I have read and understood the information sheet and the study was explained to me in detail. Furthermore, all my questions have been answered to my satisfaction and I understand that I can ask any question at any stage.

2. I understand that participation in this study is a completely voluntary decision. In addition, participation or non-participation will not have any impact on my career, and I will not receive any financial, transport support or personal benefits from participation in this study.

3. I understand and agree with the way that my data will be managed and protected in this study as reported in the information sheet; for instance, only anonymised data and quotations will be published. Moreover, only authorised people such as the supervisory team or research ethics committee will have access to my data including the consent form.

4. I understand that I can withdraw from the study after giving my consent at any time without giving any reasons.

4. I agree to participate in this study.

Participant's Name Date Signature
.....

For further information, please contact the researcher. Contact details:

Mr. Ahmed Adem (PhD candidate)
Centre for Health and Social Care Research
Sheffield Hallam University
Chestnut Court
Collegiate Crescent
Sheffield
S10 2BP
Mobile-KSA:
Mobile-UK:
E-mail: ahmed.a.adem@student.shu.ac.uk

Appendix 4. Survey exploring self-management of CLBP in KSA

Sheffield Hallam University	Centre for Health and Social Care Research
Exploring Self-management of Chronic Low Back Pain in Saudi Arabia	
Treatment sessions and patient characteristics	
<p>* 2. What percentage of your weekly caseload do you estimate are patients with chronic lower-back pain (CLBP)?</p> <p><input type="checkbox"/> 0%</p> <p><input type="checkbox"/> 1%–25%</p> <p><input type="checkbox"/> 26%–50%</p> <p><input type="checkbox"/> 51%–75%</p> <p><input type="checkbox"/> 76%–100%</p>	
<p>* 3. What do you estimate is the age of the CLBP patients whom you typically treat?</p> <p><input type="radio"/> < 20</p> <p><input type="radio"/> 21–34</p> <p><input type="radio"/> 35–44</p> <p><input type="radio"/> 45– 55</p> <p><input type="radio"/> More than 55 years</p>	
<p>* 4. How do CLBP patients most frequently fund their physiotherapy treatment?</p> <p><input type="checkbox"/> Public (government) funds</p> <p><input type="checkbox"/> Private insurance</p> <p><input type="checkbox"/> Self-funded</p> <p><input type="checkbox"/> Other (please specify)</p> <p><input type="text"/></p>	

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Appendix 4. Survey exploring self-management of CLBP in KSA

* 5. How many CLBP patients do you treat daily on average?

0
 1-3
 3-5
 5-10
 >10

* 6. Please rank the following models of treatment delivery according to how you frequently use them in your current clinical practice. (1:least frequently used treatment model—5: most frequently used treatment model).Please tick not applicable if you do not use the treatment.

	1	2	3	4	5	Not applicable
Individual sessions	<input type="radio"/>					
Group sessions	<input type="radio"/>					
Telephone-based sessions	<input type="radio"/>					
Internet-based sessions	<input type="radio"/>					
Other	<input type="radio"/>					

Other (please specify)

* 7. How long does a CLBP treatment session last on average?

< 30 minutes
 30–45 minutes
 > 45 minutes

* 8. Please estimate the percentage of CLBP patients who attend the complete number of sessions offered?

0%–25%
 26%–50%
 51%–75%
 76-100%

Appendix 4. Survey exploring self-management of CLBP in KSA

Sheffield Hallam University	Centre for Health and Social Care Research
Exploring Self-management of Chronic Low Back Pain in Saudi Arabia	
Physiotherapist management approach	
<p>* 9. What is your primary goal for CLBP patients?</p> <p><input type="radio"/> Decrease pain</p> <p><input type="radio"/> Increase muscle strength</p> <p><input type="radio"/> Decrease muscle spasms</p> <p><input type="radio"/> Improve functioning (active daily life)</p> <p><input type="radio"/> Increase range of motion (ROM)</p> <p><input type="radio"/> Other (please specify)</p> <p><input type="text"/></p>	
<p>* 10. Do you use any of the following outcome measures to assess CLBP patients?</p> <p><input type="checkbox"/> Visual Analogue Scale (VAS)</p> <p><input type="checkbox"/> Oswestry Low Back Pain Scale</p> <p><input type="checkbox"/> Quebec Back Pain Disability Scale</p> <p><input type="checkbox"/> Roland Morris Disability Questionnaire</p> <p><input type="checkbox"/> Other (please specify)</p> <p><input type="text"/></p>	

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Appendix 4. Survey exploring self-management of CLBP in KSA

* 11. Please select and rank the treatment methods for CLBP patients that you use most frequently.(1:least frequently used treatment model—5: most frequently used treatment model). Please tick not applicable if you do not use the treatment.

	1	2	3	4	5	Not applicable
Manual therapy	<input type="radio"/>					
Exercise	<input type="radio"/>					
Electrotherapy	<input type="radio"/>					
Massage	<input type="radio"/>					
Advice/education	<input type="radio"/>					
other	<input type="radio"/>					

Other (please specify)

* 12. What is the estimated percentage of the time you allocate to each intervention during CLBP treatment?

Exercise	<input type="text"/>
Education/advice	<input type="text"/>
Electrotherapy	<input type="text"/>
Manual Therapy	<input type="text"/>
Massage	<input type="text"/>
Other	<input type="text"/>

Other (please specify)

Appendix 4. Survey exploring self-management of CLBP in KSA

* 13. Please select and rank the manual therapy methods for CLBP patients that you use most frequently .
(1: least frequently used treatment model—5: most frequently used treatment model). Please tick not applicable if you do not use the treatment.

	1	2	3	4	5	Not applicable
Maitland mobilisation	<input type="radio"/>					
Mulligan concept	<input type="radio"/>					
Cyriax	<input type="radio"/>					
Mckenzie approach	<input type="radio"/>					
Other	<input type="radio"/>					

Other (please specify)

* 14. If you use electrotherapy and other modalities to treat CLBP patients, which modalities do you usually use? (1:least frequently used treatment model—5: most frequently used treatment model).Please tick not applicable if you do not use the treatment.

	1	2	3	4	5	Not applicable
TENS	<input type="radio"/>					
Interferential	<input type="radio"/>					
Microwave	<input type="radio"/>					
Infrared	<input type="radio"/>					
Hot packs	<input type="radio"/>					
Ultrasound	<input type="radio"/>					
Laser	<input type="radio"/>					
Short-wave diathermy	<input type="radio"/>					
Traction	<input type="radio"/>					
Other	<input type="radio"/>					

Other (please specify)

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Appendix 4. Survey exploring self-management of CLBP in KSA

* 15. If you use advice/education to treat CLBP patients in your daily practice, which method(s) do you usually use? (1:least frequently used treatment model—5: most frequently used treatment model).Please tick not applicable if you do not use the treatment.

	1	2	3	4	5	Not applicable
General advice	<input type="radio"/>					
Posture correction	<input type="radio"/>					
Promote an active lifestyle	<input type="radio"/>					
Cognitive behaviour therapy	<input type="radio"/>					
Other	<input type="radio"/>					

Other (please specify)

* 16. . If you use exercise to treat CLBP patients in your daily practice, which method(s) do you usually use? (1:least frequently used treatment model—5: most frequently used treatment model).Please tick not applicable if you do not use the treatment.

	1	2	3	4	5	Not applicable
Strengthening exercises	<input type="radio"/>					
Flexibility exercise	<input type="radio"/>					
Cardiovascular exercise	<input type="radio"/>					
McKenzie MDT	<input type="radio"/>					
Other	<input type="radio"/>					

Other (please specify)

* 17. Does your organization follow a particular fixed procedure or standardized guidelines for treating CLBP?

Yes

No

If yes please give details

Appendix 4. Survey exploring self-management of CLBP in KSA

* 18. Do you usually use any particular self-management approach?

Yes

No

If yes please give details

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Appendix 4. Survey exploring self-management of CLBP in KSA

Sheffield Hallam University	Centre for Health and Social Care Research
Exploring Self-management of Chronic Low Back Pain in Saudi Arabia	
Background information	
<p>* 19. How many years of experience have you had in physiotherapy?</p> <p><input type="radio"/> 2–5 years</p> <p><input type="radio"/> 6–10 years</p> <p><input type="radio"/> 11–19 years</p> <p><input type="radio"/> More than 20 years</p> <p><input type="radio"/> Other (please specify)</p> <p><input type="text"/></p>	
<p>* 20. What was your first degree?</p> <p><input type="radio"/> Two-year diploma</p> <p><input type="radio"/> Three-year diploma</p> <p><input type="radio"/> Bachelor's degree</p>	
<p>* 21. In what country did you obtain your diploma or undergraduate degree</p> <p><input type="text"/></p>	
<p>* 22. Have you attended any continuing professional development training?</p> <p><input type="checkbox"/> NO</p> <p><input type="checkbox"/> McKenzie (MDT)</p> <p><input type="checkbox"/> Maitland mobilizations</p> <p><input type="checkbox"/> Mulligan concept</p> <p><input type="checkbox"/> Acupuncture</p> <p><input type="checkbox"/> Other (please specify)</p> <p><input type="text"/></p>	

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Appendix 4. Survey exploring self-management of CLBP in KSA

* 23. Have you received or are you in the process of earning any postgraduate degree?

NO. (please move on to question 25)

High certificate or diploma

Master's degree

Doctor of philosophy (PhD)

Doctor of physical therapy

Other (please specify)

24. In what country did you obtain or are in the process of obtaining your postgraduate degree?

* 25. Where do you mainly work?

Public (government) setting

Teaching hospital

Private hospital

Private setting

Community care

Military hospital or National Guard hospital

Other (please specify)

* 26. What is your current grade?

Junior physiotherapist

Senior physiotherapist

Clinical specialist

Supervisor

Other (please specify)

* 27. Please state your nationality

Appendix 4. Survey exploring self-management of CLBP in KSA

* 28. What is your first language? Please select from the following items.

Other (please specify)

* 29. What is your second language? Please select from the following items.

Other (please specify)

* 30. How old are you?

* 31. Are you male or female?

Male

Female

* 32. city

Appendix 4. Survey exploring self-management of CLBP in KSA

Sheffield Hallam University	Centre for Health and Social Care Research
Exploring Self-management of Chronic Low Back Pain in Saudi Arabia	
Thank you	
Thank you very much for your help with this research.	
Please be assured all you answers will be treated in the strictest confidence.	
33. Participants will be provided with a summary of study results if they are interested. Please write your email or mobile number	
<input type="text"/>	

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Appendix 5. Study guide - Patients

Ice breaking questions

- 1- Could you please tell me about your LBP?
- 2- What is the impact of LBP in your daily life?

Expectation

- 3- What are the main reasons for attending a physiotherapy service for treating your CLBP?
- 4- What was your expectation about physiotherapy treatment for LBP before attending? Were your expectations met?

Treatment

- 5- Do you think you have been provided with enough information about CLBP, education and advice by a physiotherapist? Could you please explain?
- 6- How would you describe your involvement in making decisions regarding the selection of a particular treatment? Why? What could be done to enhance your participation in decision making, such as treatment selection?
- 7- What do you consider to be the most effective method to treat CLBP?

Self-management

- 8- How do you cope with CLBP?
- 9- What are the approaches that you think physiotherapists should use to improve your coping with CLBP symptoms?
- 10-Do you prefer to manage your CLBP independently (without a physiotherapist) after discharge or visit physiotherapy again if CLBP symptoms remain or are provoked in the future? Why?
- 11-Do you think that you have enough support from physiotherapists to enhance your self-management skills after discharge? How could you improve it?
- 12-What are the factors that you think may influence your decision to adopt and adhere to self-management to help you cope with LBP?

Satisfaction

- 13-If you have a new episode of CLBP in the future, would you consider using physiotherapy services? Would you use anyone else?
- 14-How would you describe physiotherapists' communication skills?
- 15-Is there anything else you would like to talk about that we didn't cover?

Appendix 6. Study guide - Physiotherapists

Ice breaking questions

- 1- Could you please tell me about the common type of patients with LBP visiting your clinic?
- 2- What do you think is the patient's expectation of physiotherapy treatment for CLBP before attending physiotherapy? What about after their physiotherapy session?

Assessment

- 3- Can you tell me what your primary goal is for CLBP patients? Why? What about the patients?
- 4- Do you use any outcome measures to assess CLBP patients? Which? Why?

Treatment

- 5- What do you think is the advice you should be giving to your CLBP patient? What about patient adherence to that advice?
- 6- Do you follow a particular fixed procedure or standardized guidelines for treating CLBP? Why?
- 7- What do you consider to be the most effective method to treat CLBP?

Self-management

- 8- How can patients cope with CLBP?
- 9- How can you describe your role in helping patients cope with CLBP independently without medical assistance?
- 10-What are the approaches that you think physiotherapists should use to improve patients' skills in coping with CLBP symptoms?
- 11-What do you know about behaviour therapy, such as cognitive behaviour therapy?
- 12-What are the factors that you think may influence your decision to adopt teaching a self-management program to help patients cope with CLBP?
- 13-Do you think that physiotherapists provide enough support to enhance patients' self-management skills after discharge? How can this be improved?

Patient-physiotherapist relation

- 14-How would you describe patient-physiotherapist communication?
- 15-Is there anything else you would like to talk about that we didn't cover?