COPING RESPONSES AND SELF-MANAGEMENT STRATEGIES FOR INDIVIDUALS WITH CHRONIC LOW BACK PAIN FOLLOWING PHYSIOTHERAPY DISCHARGE IN KUWAIT: A MIXED METHOD STUDY

A thesis submitted for the degree of
Doctor of Philosophy

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07/2024

Abstract

Background: Patients' engagement with self-management strategies (SMS) is crucial in managing chronic low back pain (CLBP) and relies on appropriate information from treating physiotherapists. However, patients have differing coping response strategies (CS) which may be influenced by culture and impact SMS success.

Aims: To explore patients` CS and their perceptions of SMS in the specific cultural context of Kuwait, and to explore physiotherapists’ perceptions of patients` CS and SMS post-physiotherapy discharge.

Method: A study in Kuwait employed a partially mixed sequential dominant status design, using Patient Reported Outcome Measures (PROMS) and semi-structured interviews with CLBP patients. A quantitative phase categorised 10 patients into those who adopted mainly active (PAS) or passive CS (PPS) pre-physiotherapy. Repeated PROMS and interviews post-physiotherapy determined CLBP patients` perceptions of CS and SMS. Interviews gathered Physiotherapists` perceptions on patients` CS and SMS.

Quantitative findings: The PAS group reported high self-efficacy, less medication use, normal anxiety, and depression levels, and used more active CS pre- and post-physiotherapy. Praying and hoping was a common spiritual CS among all patients who lead their life as part of the Islamic culture.

Qualitative findings: CLBP patients' themes indicated that the PAS group adopted more active CS compared to the PPS group. Most patients in both groups reported lacking full details about home treatment exercises (HTE). Physiotherapists` themes indicated that they were confident using their expertise to screen CS and tailored exercises differently for PAS and PPS patients.

Conclusion: There appear to be different CS in CLBP patients who were classified into PAS and PPS and may require different SMS. Adherence to a HTE is linked to those exhibiting active CS and being less reliant on medication. The knowledge and influence of culture can give an insight into developing targeted CS in some patients.

The classification approach used needs further consideration as its validity and reliability is not established.

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List of Abbreviations

Arabic Pain Coping Strategies Questionnaire	ArPCSQ
peace be upon him	PBUH
Coping response strategies	CS
Chronic low back pain	CLBP
Critical Appraisal Skills Programme tool	CASP
Fear-avoidance belief	FAB
Forward translated	FT
Home treatment plan	HTP
Hospital Anxiety and Depression Scale	HADS
Hospital Anxiety and Depression Scale, Arabic version	HADS-Ar
Joanna Briggs Institute tool	JBI
Low back pain	LBP
National Chronic Disease Strategy	NCDS
National Health Service	NHS
Numerical Pain Rating Scale	NPRS
Örebro Musculoskeletal Pain Screening Questionnaire	ÖMPSQ
Pain Coping Strategies Questionnaire	PCSQ
Pain Self-Efficacy Questionnaire	PSEQ
Patient self-reported outcome measures	PROMS
Patients who mainly adopted active strategies	PAS
Patients who mainly adopted passive strategies	PPS
Personal protective equipment	PPE
Physiotherapist	PT
Physiotherapy evidence database	PEDro
Preferred Reporting Items for Systematic Reviews and Meta-Analyses	PRISMA
Quality of life	QOL
Randomised controlled trials	RCTs
Roland-Morris Disability Questionnaire	RMDQ
Self-management strategies	SMS
STarT Back screening tool	SBST
STarT Back screening tool, Arabic version	SBT-Ar
Systematic review	SR
The Arabic version of NPRS	NPRS-Ar
United Arab Emirates	UAE
United Kingdom	UK
United States	US
Vanderbilt Pain Management Inventory Questionnaire	VPMIQ
Visual analogue scale	VAS
World Health Organisation	WHO

Acknowledgements

My motivation was about to be diminished when my wife delivered our second baby, Omar, during the first month of my PhD programme. The baby had birth issues which placed considerable pressure on me. Both my wife and I decided that I should continue to pursue my PhD for the sake of our family. It was so difficult for me to live in Cardiff and to leave my family in Kuwait. In order to tackle this burden, I firstly believed that my God would help me to overcome this distressing situation, as well as carrying on socialising, exercising regularly, eating healthily and receiving strong support from my parents, family and supervisors. All these factors together motivated me and helped me to overcome my emotional distress.

Thanks to God, “Al Hamdulah”, for achieving this point. I would like to express my sincere gratitude to my supervisors, Professor Valerie Sparkes, Dr. Rebecca Hemming and Dr. Carly Reagon. I would not have completed this thesis without your endless support, encouragement, valuable feedback, recommendations and consideration of my son`s health situation. Thank you for being my Welsh family.

Thanks to my parents, siblings, relatives and friends from Kuwait for being in contact and encouraging me during my PhD journey. Special thanks to my amazing wife, my super wife, for being patient, understanding and for caring for my children whilst I was in the United Kingdom. Words are not enough to express what you deserve, but all that I can say is thank you for taking on extra responsibility, for being a mother and father, and for caring for our son Omar, who has health issues and special needs, especially when Omar needed to be abroad in the United States for his illness and staying there for two years just to encourage me to finish my PhD journey. Thank you, my wife, for being the best partner in my life.

I am grateful to my colleagues, Fawaz, Bindayel, Amani, Anfal Asteek, Akushla, Aseel, Altaf Muhanna, Moayad, Muhannad, Rayan and Abdulrahim, and to those colleagues in Eastgate House 12 Floor for being unique and for being one big family. A special thank you is extended to the Ministry of Defence of the State of Kuwait for sponsoring my scholarship and for giving me this opportunity to participate in this fantastic Welsh culture. Finally, I am grateful to all individuals who participated in this study.

Chapter 1: Introduction

This study focuses on data collection based in Kuwait and as such, the literature will relate where possible to literature relevant to the Arabic world, including Kuwait.

1.1 Introduction to Kuwait society and healthcare system

Kuwait is in the Middle East, and borders onto the Iraqi state and the Kingdom of Saudi Arabia (KSA). The official language of the country is Arabic, and Islam is the official religion in Kuwait embraced by the majority of the citizens of Kuwait and non-citizens, and Islam is considered to be the main source of legislation in addition to the constitution (Casey 2019). Kuwait is a modern and developing country but can be considered tribal (Wheeler 1998). Kuwaitis attribute their cultural beliefs and Islamic values as being an influence on people's behaviour, and this may be demonstrated in the sociocultural component of a patient's specific experience of pain (Raja and Jameel 2021).

The healthcare system (primary, secondary and specialised healthcare) is controlled by the Ministry of Health (MOH) of Kuwait, with private hospitals also being subject to MOH policies. Primary healthcare in Kuwait provides services similar to those in Western countries, including family medicine, nursing and maternity care, and pharmacy (Health system profile 2006). There are seven main government hospitals (Secondary care) in Kuwait i.e. Farwaneya, Al-Amiri, Al-Sabah, Al-Jahraa, Mubarak, Al-Adan and Jaber Al-Ahmad Hospitals, with specialised centres dealing with condition such as cancer (Al-Jarallah 2010).

1.2 Introduction to low back pain

Low back pain (LBP) is a global phenomenon characterised by symptomatic episodes and recurrence and is a major cause of disability (WHO 2023). The burden of LBP in the Arab world, including Kuwait, has been increasing and is approximately equal to that of Western countries (Mokdad et al. 2014; Vos et al. 2016). The cost of LBP has increased globally, and one reason could be continued use of passive treatments by Physiotherapists rather than encouraging an active patient role for pain management (May 2005). Utilisation of a biopsychosocial approach is considered to be a core component of effective treatment for chronic low back pain (CLBP) (Kamper et al. 2016), as CLBP often comprises a mixture of biophysical, psychological, social and cognitive behavioural factors that negatively impact daily function, societal participation and personal finances (Hartvigsen et al. 2018; Corrêa et al. 2022), and nervous system alterations (Griensven et al. 2014). CLBP also has spiritual connotations that might cause people from diverse cultures to react differently to pain (Narayan 2010). Islam urges Muslims to accept their illness as part of their faith, be patient in life, with the promise of a better reward in eternal life (Hammoud et al. 2005), but this does not prevent them from seeking treatment since this is considered in Islam to be an individual's responsibility to maintain bodily and psychological health (Nabolsi and Carson 2011).

Coping with pain can also be influenced by religious and cultural beliefs, by which patients may use cognitive or behavioural strategies related to their religious belief to help manage pain or emotional stress (Aflakseir and Coleman 2011). In Arabic Islamic nations participation in religious events and visiting mosques for prayer are seen as active and positive CS that support the treatment that patients with CLBP receive (Maki et al. 2021). When patients cooperate with God to seek support, make an individual effort to address their pain, and equally share problem-solving responsibility with God (Dedeli and Kaptan 2013), this is regarded as a positive collaborative religious CS (Aflakseir and Coleman 2011). However, some individuals may use mainly passive CS to deal with their pain, such as submitting everything to God to resolve their pain, which is argued as an insecure relationship with God (Voytenko et al. 2021), and may be described as a negative deferring religious CS (Dedeli and Kaptan 2013).

For efficient tailored management stratification of patients is required (Foster et al. 2013). For CLBP treatment, management guidelines from the National Institute for Health and Care Excellence (NICE) (2018; 2021), report that patients could be stratified into patients who adopted mainly active (PAS) or passive CS (PPS). This classification may offer an alternative solution compared to other stratification approaches, including movement patterns, motor control, signs and symptoms, and may be a route to develop targeted self-management strategies (SMS). SMS encourage patients to take responsibility for their condition with input from their healthcare provider (NICE 2021). Adopting SMS is a long-term process, and biopsychosocial barriers may be present (Escolar-Reina et al. 2009), thus, support and appropriate education are needed, from healthcare professionals as a partnership, and from family (Newman et al. 2004). Within the literature it is recommended that physiotherapists acknowledge theories of behavioural change (Krein et al. 2007; Jack et al. 2010) and consider a biopsychosocial approach to

CLBP management (Apkarian et al. 2009). Factors, such as patients` confidence to be active despite pain, i.e. self-efficacy, levels of anxiety and depression, and the type of CS that patients employ, may be important when developing SMS for patients with CLBP.

Physiotherapists frequently treat patients with CLBP who may develop certain CS to deal with their pain, and physiotherapists could benefit from understanding how these patients manage their pain (Maki et al. 2018). Ascertaining and studying specific CS that patients employ could help guide physiotherapists to develop treatment plans for patients with CLBP and to facilitate adoption of SMS (Jensen and Karoly 1991). NICE (2021) recommended early screening at the first point of patient contact to make care more efficient by identifying who is at risk of poor clinical outcomes (Hill and Fritz 2011).

However, to date, no research has been conducted on patients with CLBP in Kuwait exploring their perspectives on CS and SMS within the context of physiotherapy. Likewise, physiotherapists` perspectives on patients' CS and SMS following discharge, and the reasons behind their choices of SMS for patients with CLBP, remain unexplored.

1.3 Aims of the study

The two main aims of this study are to explore patients` CS and their perceptions of SMS in the cultural context of Kuwait, and to explore physiotherapists' perceptions of the patients` CS and SMS at discharge following physiotherapy. The two secondary aims are to report patients' changes using patient self-reported outcome measures (PROMS) pre- and post-physiotherapy treatments, and to use patients` qualitative data to provide provisional data to support the proposal of a system to categorise patients as PAS and PPS.

1.4 Research design

A mixed methods design was used (Creswell and Creswell 2018), specifically a partially mixed sequential dominant status design (Leech and Onwuegbuzie 2009). This comprised a sequential design including questionnaires and semi-structured interviews. The research was conducted in two phases:

Phase one: pre-physiotherapy: a quantitative phase to investigate patients` CS, their self-efficacy, pain levels and their risk of having persistent LBP using PROMS, which would provide additional detail to the qualitative data.

Phase two: post-physiotherapy discharge: a quantitative and qualitative phase, which commenced 4-8 weeks after discharge. The quantitative phase used PROMS and qualitative phases used semi-structured patient interviews which explored their CS and how these could affect the SMS adopted following physiotherapy. A further qualitative phase (semi-structured interviews) was conducted with physiotherapists to explore their opinions about the CS and SMS of patients with CLBP, and the most appropriate treatment.

1.5 Preliminary reflexivity of the researcher

My name is Mohammad Ahmad Mandani. I am a lieutenant colonel physiotherapist and I have been working in a military hospital in Kuwait since 2010. I obtained my bachelor's degree in 2009 and immediately, I joined the Kuwait army. Since 2010, my role has been to provide physiotherapy healthcare to military people and their families, alongside my military duties. I am interested in musculoskeletal disorders, and especially the treatment of CLBP as I consider this to be a challenge. I noticed that most people who kept attending the physiotherapy department in the military hospital had CLBP. I kindly asked most of them about their reason for their repeated attendances. Some reported that the treatment was effective for a short period of time, but then the pain relapsed, and some said that the treatment was not effective in reducing pain. I therefore realised that the treatment needed to be developed. Inside myself I had a doubt about the treatment being delivered to the patients and that the SMS delivered was not effective. My duty was to discover this and to upgrade my knowledge to deliver the best treatment.

I therefore decided to continue my studies, in addition to taking several physiotherapy courses, I obtained my MSc in musculoskeletal rehabilitation in 2016 from Oxford Brookes University and continued clinical work focusing on treating people with spinal issues. However, the results were the same and I did not feel that I was able to let patients depend on themselves. Many patients kept reattending and seeking further physiotherapy. Additionally, I was not able to screen patients for any psychological symptoms, and where relevant I referred them to the psychiatry department.

At this point, I believed that I had to follow my ultimate desire to do further research and this goal was realised when I received a PhD offer at Cardiff University in 2018. Hopefully, through exploring how CS could influence the SMS from both physiotherapists' and CLBP patients' perspectives, I would be able to deliver more advanced treatment enabling CLBP patients to be able to manage themselves more effectively.

Chapter 2: Literature review

2.1 Literature search strategy

The primary aim of this literature review was to identify and to evaluate the relevant literature that referred to CS and SMS in individuals with CLBP. In addition, the literature related to patients` adherence to treatment in relation to the patient characteristics which were evaluated. In order to evaluate these aspects, the following contributing factors were considered to be fundamental:

- Coping response strategies
- Motivation to exercise
- Depression
- Anxiety
- Adherence to treatment
- Pain self-efficacy
- Patients` expectation of treatment
- Patient-centred treatment
- Patients` preferences
- Self-management strategies
- Islamic culture
- Spirituality

A comprehensive search strategy was applied to include the relevant research evidence in this study. Several electronic databases were accessed to identify suitable and relevant literature. Medically based electronic databases which were searched for this review included PubMed, ScienceDirect, Medline via Ovid, AMED, PEDro, Google Scholar, CINAHL, Embase and the Cochrane Library. Articles were restricted to the English language, regardless in which country the study was conducted to avoid translation issues and to narrow the search area. In addition, the Arabic literature is usually written in English language to achieve publication in respected journals. Most of the literature concerning CS for people with CLBP were dated prior to 2010 and so no search date limits were imposed. However, where possible, the most recent literature concerning SMS and CS were included. A manual search was also conducted to obtain important secondary citations of interest identified from the obtained articles. Several keywords were entered into the literature search for the review (Appendix 1). Implementing both inclusion and exclusion criteria are important for narrowing the database searches to identify the most relevant and appropriate articles for this review.

The search identified a wealth of studies investigating CS in individuals with chronic pain and different SMS specifically for CLBP patients. These publications were then systematically appraised to evaluate their strengths and weaknesses, and to evaluate the validity of the included studies. Most of the critique was conducted on key papers that focused on CS and SMS. Cohort, prospective, qualitative, quantitative and longitudinal studies were evaluated using the Critical Appraisal Skills Programme (CASP) tool (CASP 2013; Nadelson and Nadelson 2014). Randomised controlled trials (RCTs) were evaluated using CASP and the physiotherapy evidence database (PEDro) (Morton 2009). The Joanna Briggs Institute tool (JBI) was used for evaluating cross-sectional studies and quasi-experimental clinical trials (Munn et al. 2014; 2019). Systematic reviews (SRs) were analysed using the Preferred Reporting Items for SRs and Meta-Analyses (PRISMA) guide (Page et al. 2021). The Scale for the Assessment of Narrative Review Articles (SANRA tool) was used to evaluate the quality of narrative review studies (Baethge et al. 2019).

2.2 Overview of low back pain

Most people will experience LBP at least once in their life. Although LBP may not be regarded as a life-threatening disorder, it is responsible for a monumental global health problem and contributes to substantial economic loss to the National Health Service (NHS), costing an annual total of £1bn, which includes £150 million for physiotherapy (Sanna Rimpilainen 2016). This economic burden is heightened by indirect costs, such as work absenteeism and direct expenses, such as treatment fees (Hoy et al. 2010). Healthcare providers may contribute to the considerable cost expenditure by frequently administered passive pain relief treatments for people with LBP, and if successful patients will often return for similar treatment (May 2010; Oliveira et al*.* 2012).

LBP is a global phenomenon which is increasing in prevalence and is a major cause of disability (Vos et al. 2016, WHO 2023). The prevalence estimation points range from 1.0% to 85.1% (mean: 18.1%; median: 15.0%), and the 1-year prevalence from 0.8% to 82.5% (mean: 38.1%; median: 37.4%) (Hoy et al. 2010). LBP is a long-term health challenge characterised by symptomatic episodes, remission and recurrence (Silva et al. 2017). Individuals with LBP frequently have coinciding pain in other body areas, including one or both buttocks and legs, as well as other general physical and mental health issues (Hartvigsen et al. 2018). Thus, LBP is multifactorial, which may be biophysical, i.e. alterations in muscle size, and coordination; psychological, such as anxiety, depression and catastrophising; social, which impacts negatively on daily function, and societal participation and personal finances (Hartvigsen et al. 2018); and cognitive behavioural, i.e. fear avoidance and maladaptive beliefs (Corrêa et al. 2022).

LBP is often referred to as pain due either to a serious or definitive underlying pathology or a non-specific cause (Koes et al. 2010). Serious underlying pathology including infections, spinal malignancy, inflammatory disorders and cauda equina syndrome, need medical assessment (Koes et al. 2010; NICE 2020). Specific underlying pathologies comprise structural changes that may be directly related to symptoms, e.g. disc prolapse, and spinal stenosis, whilst other causes are seen as non-specific LBP where the cause is unknown (NICE 2020).

CLBP is described as pain that continues for more than 12 weeks, and commonly, may not display a clear underlying pathoanatomical cause (O'Sullivan 2005; NICE 2018). It is thought that no definitive diagnosis can be attained for the vast majority (85%) of people with CLBP (Waddell 2004). The term ‘persistent back pain’ is increasingly being used as the 12-week timeframe appears not to be helpful in some instances (NICE 2018). Ramond et al. (2011) explained chronicity as pain persistence which, in some cases, allows for the development of negative behaviours, such as passive CS, emotional and cognitive reactions, such as depression, anxiety, and catastrophising (McCracken and Turk 2002) .

2.2.1 The biopsychosocial spiritual model

The biopsychosocial model integrates physical and biomedical, psychological and social factors (Foster and Delitto 2011), and provides insight into understanding pain experiences (Waddell 2004). Understanding pain entails considering these factors, and the relationship between the body and mind is important (Sluka 2009). The model demonstrates how emotional and cognitive factors can influence pain (Main et al. 2010).

The biopsychosocial approach demonstrated that CLBP is identified by a combination of physical, psychological and social dysfunctions (Kamper et al. 2015) that influence the maintenance of pain and disability (Nicholas et al. 2011). For example, Kuehl et al. (2010) and Rivat et al. (2010) revealed that there is an association between stress and a reduced pain threshold, while Sullivan et al. (2004) showed that anxiety prior to pain was linked to increased pain sensitivity, and therefore it is proposed that the stress response prior to injury could possibly lead to central sensitisation once pain occurs.

Despite its efficacy in CLBP, the biopsychosocial approach often overlooks spirtuality and religion (Taylor et al. 2013). Since spirituality and religion hold significant importance in the lives of numerous CLBP patients, it is crucial to integrate this dimension into any comprehensive chronic pain model (Taylor et al. 2013). According to Saad et al. (2017), holistic healthcare should encompass the entirety of a patient's relational existence, thereby contributing to a more comprehensive approach of care. The biopsychosocial-spiritual model addresses the human soul’s drive, along with mental health, personality, sex, age, social interactions, and responses to stress (Lysne and Wachholtz 2011), and integrates biomedical, psychological, social and spiritual factors, such as worship attendance and religious support (Taylor et al. 2013).

Therefore, this study focuses on the biopsychosocial-spiritual model, particularly relevant in Kuwait, where the majority of the population embraced Islam. Ferreira-Valente et al. (2020) proposed that spirituality is the degree to which an individual has or is seeking for meaning and a sense of purpose in life, feelings of transcendence and relatedness to a higher power, as a source of hope in the face of hardship. This model aims to identify the role and influence of religious and spiritual beliefs on the thinking process, the development of hope, self-efficacy, the ability to accept and tolerate pain, promote self-reflection, searching of strength from a higher source and preventing negative thoughts, such as blaming God for having pain (Lysne and Wachholtz 2011). Therefore, spirituality can influence the CS that individuals employ when they encounter pain (Raja and Jameel 2021).

Dezutter et al. (2011) reported that the more severe the pain is then the more likely that individuals engage in religious activities, such as praying. Spirituality and religiosity could also influence healthier lifestyles, such as reducing alcoholism, smoking, rates of depression, and improvement of social links (Chamsi-Pasha and Chamsi-Pasha 2021)**.** The belief system of people with chronic conditions therefore possibly could be changed, as people are more likely to become religious/spiritual when in pain, as they seek for better psychological health (Lysne and Wachholtz 2011). Therefore, Dunn and Horgas (2004) and Aflakseir and Coleman (2011) defined religious CS as the reliance on cognitive or behavioral strategies that are linked to religious beliefs, which could aid in managing pain, physical discomfort or emotional stress.

Baldacchino and Draper (2001) reviewed 187 research papers concerning coping with illness based in the USA and UK, highlighting the use of spiritual CS by both believers and non-believers. They showed that individuals may experience disharmony of body, soul and mind during their illness. They found that non-believers relied on meditation to connect with the inner self, realise their strengths and their relationship with friends and family. However, the believers increased their relationship with God as a source of hope and strength through prayers, and participation in community worship. The review concluded that spiritual CS may aid individuals in self-empowerment leading to an adjustment of the purpose and meaning in illness.

In the context of clinical work with Muslim patients, Shah (2005) discussed that human psychology has a spiritual factor that needs a non-materialistic approach in managing it, and Islamic prayer can be the choice to address this (Hamdan 2007). Therefore, it might be important for physiotherapists treating Muslims` patients to recognise the spiritual dimension of psychological treatment by combining Islamic prayer into treatment (Hamdan 2007; Henry 2015). Integration of Islamic prayer into treatment could improve the therapeutic outcome in some patients, which can be achieved by enquiring about the role of prayers in individual`s life (Abu Raiya and Pargament 2010). Encouraging individuals to perform Islamic prayers either at home or mosques could facilitate personal and behavioural change and improve emotional status (Abu Raiya and Pargament 2010; Henry 2015).

From a western perspective prayer could enhance the individual`s optimism, hope and establish comfort with the therapist and treatment that promotes healing (Henry

2015). However, integrating spirituality into treatment should be conducted with caution. Hodges (2007) advised against engaging in theological discussion, emphasising the importance for physiotherapists to understand the patients' beliefs and how they can support therapeutic goals without necessarily agreeing or disagreeing with individual faiths.

Coping from an Islamic perspective extends beyond spirituality and emphasises the importance of socialising that demands a relationship between mankind and society as a form of social support, including family and community (Salleh et al. 2009). Family in Islam is key for providing emotional support, socialisation and reproduction, reflecting the fundamental caring structure in the community (Salleh et al 2009). Muslims are requested by God to offer help to those who are suffering or in need, in a positive spirit of mutual cooperation (Masters et al. 2007). This is based on the standpoint that every Muslims in society is related to each other via their shared humanity. However, there are no studies from Arabic and Islamic perspectives exploring the influence of the level of social support on pain, disability, and psychological wellbeing CLBP patients. Social support, as defined by Masters et al. (2007) encompasses interactions with others and resources that support coping with challenges, and their physical and emotional implications. Emotional support involves family attachment, reassurance, feelings of acceptance and belonging (Masters et al. 2007). Strong social support can help individuals feel more mentally strong to face their illness, as it encourages active CS (e.g. the patient becomes more able to accept the illness and increases socialising), which may aid in coping with chronic pain (Oraison and Kennedy 2021).

Arabic people, including those in Kuwait, generally live in extended families and socialise in an Islamic community. These families often share historical roots under one surname, are not individually oriented but collectivist, and family members are mutually responsible for the care of members with disabilities and illness (Farsoun 2004). Oyserman and Lee (2008) demonstrated two types of relationships between people and societies, such as individualism and collectivism, and how relationships are built in each. In individualism, the core component is the person where societies occur to support the well-being of people and are seen as being independent from one another. However, in collectivism, the group is the key element and persons are seen as structurally bonded and connected through relations and group memberships. For example, Kuwaiti families usually are united by social events, such as family members paying some marriage expenses, and senior members may gather to discuss solutions to a major family issue. Those who are unwell, and the elderly are welcome in social gatherings as part of the Islamic faith and Arabic traditions (Zogby 2002). Thus, Islamic teachings and Arabic traditions unite Kuwaiti people, as religion was defined as a social organization in which people participate in groups seeking for a meaning (Dedeli and Kaptan 2013).

Traditions and customs urge Arabic people, including Kuwaitis, to visit their relatives, friends, and neighbours who are unwell and to keep people close to each other in time of sadness or joy and to promote social interactions (Zogby 2002). Visiting sick people is compulsory from an Islamic teachings perspective and was requested by the prophet Mohammad Peace be upon him (PBUH), that each believer should support sick people through visiting them (Khan 1990a). Thus, during these visits, patients can share their experiences about their illness or pain and visitors might provide recommendations for solutions for their pain. Thus, patients' beliefs and attitudes therefore might be influenced through such support; however, there is no research available in Kuwait to support this.

Literature from western countries revealed the impact of high and low social support on patients` level of pain and psychological wellbeing. McKillop et al. (2017) examined the effect of social support on psychological status in 483 patients with CLBP. They concluded that CLBP patients who reported high social support including emotional, and positive social interactions, had a lower chance of experiencing anxiety and depression. López-Martínez et al. (2008) tested the relationship between perceived social support, CS, and depressed mood in 117 people with CLBP in Spain. A key finding showed that low perceived social support in patients with CLBP showed a modest but significant relationship between social support and passive CS.

People with CLBP may feel marginalised due to social isolation from their friends and family (Crowe et al. 2010a), and this concept of marginalisation may extend into clinical practice. Where patients do not receive a clear diagnosis for their pain, they may feel marginalised due to the fact that they may feel that the clinician did not believe them. Craig et al. (2020) reported that doubt about sources of pain is common when pain is not able to be diagnosed and in some cases healthcare professionals may feel less sympathy for patients. People with CLBP in Kuwait therefore might feel marginalised if an element of disbelief is expressed by their healthcare providers, or indeed family and friends. Wallace et al. (2021) called for improved equity-oriented responses to marginalised patients, as they further noted that some clinicians in several healthcare systems do not engage in shared decision-making when designing treatment approaches for CLBP and patients may feel dissatisfied with this approach of telling them what to do, without any involvement in deciding what may suit them best.

However, to the author`s knowledge, there is a lack of research exploring whether CLBP patients in Kuwait and Gulf countries are being marginalised by their healthcare providers and socially isolated by their family. Several studies from Western culture reported that patients with LBP felt that their healthcare providers did not believe their reports of symptoms and became socially isolated by their families and friends (Hawthorne et al. 2013). Therefore, CLBP people in Kuwait may feel marginalised as those in western culture do by some healthcare providers and to some extent by their families.

2.2.2 Psychosocial factors in low back pain

Psychosocial barriers to LBP include fear avoidance beliefs (FAB)(Vlaeyen and Linton 2000), the anticipation of catastrophe (Bunzli et al. 2017), coping style (Sleijser-Koehorst et al. 2019), a poor understanding of how pain may be managed (Leeuw et al. 2007), perception of illness (Foster et al. 2008), depression related to pain and concerns about what the future holds (Henschke et al. 2008), patient expectations and beliefs about their condition (Liddle et al. 2009), and self-efficacy (Bandura 1977; Hilfiker et al. 2007).

The experience of pain is influenced by sensory factors and by emotional and cognitive factors which interact with each other to produce FAB, reduced self-efficacy and catastrophising, all of which can have a major impact on the experience of pain (Gatchel et al. 2007; Main et al. 2010). Psychosocial elements appear key in the management of CLBP and other chronic conditions (Michie et al. 2009; Bunzli et al. 2017), with strong evidence in SRs suggesting that anxiety and depression are predictors of pain persistence and CLBP disability (Pincus et al. 2002; Bair et al. 2008; Nicholas et al. 2011; Ramond et al. 2011). However, anxiety and depression failed to predict patients return to work, in SRs by Steenstra et al. (2005) and Iles et al. (2008).

Current evidence from both non-Western and Western settings endorses the link between anxiety and depression with CLBP and functional disability (Bener et al. 2013; Bair et al. 2013; Kroenke et al. 2013; Sagheer et al. 2013). However, the studies had cross-sectional designs which prevented any suggestion of causality. Hence, depression and CLBP might occur separately or concurrently. Anxiety and depression frequently occur amongst people with CLBP (Tangestani et al. 2012; Sagheer et al. 2013) and are more likely to be reported by women (Bair et al. 2013; Kroenke et al. 2013). Thus, individuals may exhibit a range of fears about pain including a fear of work activities, and fear of pain itself (Leeuw et al. 2007).

In the Arabic region, there is a dearth of research on symptoms of distress, depression and anxiety in Arab patients with CLBP. Bener et al. (2006) investigated the prevalence of depression and somatisation in United Arab Emirates (UAE) patients with LBP in primary care and found an association between depression and LBP that was only slightly more significant than the association with somatisation. Nevertheless, both associations were found to be high in younger patients with lower educational levels. Similar results were found in LBP patients in Qatar with the prevalence of both depression and somatisation being higher in primary care patients with LBP than those without LBP (Bener et al. 2010).

Patients with depression could exhibit somatic symptoms, such as back pain and general pain (Bener et al. 2006). The existence of somatisation in younger patients with a lower educational level was explained by the author as being possibly due to the perceived negative image of mental health disorders in such nations, where depressed patients experience physical symptoms despite the absence of medical illness (Bener et al. 2006).

The FAB model of Vlaeyen and Linton (2000) proposes how psychological factors influence the experience of pain, and development of chronic pain, and why disability may develop in some individuals and not in others. It relates to two possible pathways as some people see pain as non-threatening and demonstrate a continuous engagement in activities, whereas others describe thoughts about threats and catastrophe relating to pain, which then causes the person to fear pain and to avoid behaviours that may result in pain (Vlaeyen and Linton 2000).

Within this theoretical concept, catastrophising was defined as “an exaggerated negative mental interpretation of pain where a relatively neutral event is irrationally made into catastrophic’’ (Linton and Shaw 2011, p.704). Vlaeyen and Linton (2000) hypothesised that a catastrophising response occurred due to a negative belief about pain or negative illness information that leads patients to imagine the harshest possible results, which may lead to a fear of engaging in activity. Sometimes this avoidance response is a reaction to receiving unhelpful information about their back, such as their back is degenerating (Bunzli et al. 2017). This in turn can cause distress, and fear of activity (Vlaeyen and Linton 2000; Vlaeyen and Linton 2012).

Kovacs et al*.* (2012) evidenced that catastrophising increases during treatment failure and diminishes with effective treatments. Treatment failure was seen by patients where pain persists and this might increase patient distress and trigger negative thoughts, such as not engaging in activity to reduce their pain. This could help to illustrate the important relationship between catastrophising and pain-related disability in cross-sectional studies of patients who have obtained numerous treatments for CLBP (Severeijns et al. 2004; Lamé et al. 2005). Thus, catastrophising might be acknowledged to be a result of pain rather than a cause of management failure (Kovacs et al*.* 2012).

In SRs by Iles et al*.* (2008) and Ramond et al. (2011), FAB was found to be a predictor of chronicity, CLBP disability and failure to return to work. There is strong evidence that in addition to psychological distress, FAB and catastrophising were involved in chronicity and CLBP disability (Ramond et al. 2011). The strength of this review is by the inclusion of only prospective studies with patients with acute LBP at baseline, which enabled cause and effect to be established. Further strengths are that it splits pain (intensity, duration), disability, work status (period of sick leave, reimbursement status), participation (social and family activities/restriction in leisure), and patient satisfaction (self-perceived recovery, satisfaction with ongoing symptoms) outcomes which explained associations. For example, FAB and catastrophising were better predictors of disability than the chronic progression of LBP (Ramond et al. 2011).

There is growing evidence to indicate that catastrophising is a predictor of constant pain and CLBP disability (Nicholas et al. 2011). A SR by Wertli et al*.* (2014), of 19 cohort studies using valid and reliable PROMS, found that catastrophic thoughts were prominent in CLBP disability. The study concluded that CLBP patients who identified as having high catastrophic thoughts experienced a worse outcome compared with low catastrophisers and reducing patients` catastrophic thoughts could facilitate effective treatment in CLBP patients. Similar to the findings of Thomas et al*.* (2010), they examined patients' catastrophising thoughts and FAB with 50 CLBP patients and reported that these psychosocial factors were able to predict CLBP disability (Thomas et al. 2010). Attention is therefore needed as a large proportion of CLBP people (78%) report catastrophic thoughts (Tangestani et al. 2012).

However, in the review by Wertli et al*.* (2014), although four RCTs endorsed the role of catastrophising in CLBP treatment, two included RCTs did not discover that catastrophising was a prognostic factor for disability or for treatment satisfaction (Hill et al. 2008a). This could be because the association between catastrophising and disability disappears when other psychosocial factors, such as anxiety (Moix et al. 2011), FAB (Meyer et al. 2009), or self-efficacy and illness perceptions (Foster et al. 2010) are accounted for. Similar to Western studies, a cross-sectional study conducted by Alamam et al. (2019) examined the psychosocial factors in 115 people with CLBP in KSA. The study used valid and reliable culturally adapted PROMS and found an association between pain and psychosocial factors, such as FAB, anxiety and depression with disability. This study confirms the belief that CLBP-related disability is a multifactorial biopsychosocial condition across different cultures. However, the study had some limitations, such as a predominantly female participant sample, which was probably influenced by the female researcher`s greater access to female participants due to Saudi cultural customs. Furthermore, controlling any possible confounding factors was not reported, or adjusted in the study.

2.2.3 Arabic culture and low back pain

Cultural factors play a significant role in pain perception, as pain has physical, social, psychological and spiritual components (Narayan 2010). Accordingly, people from different cultures react differently to pain. Cultural influences also extend to people's beliefs about how to avert illness, and when to ask for treatment, and how individuals experience and respond to pain (Narayan 2010).

Persistent back pain was found amongst Kuwaiti people regardless of their age and was also found in adolescents aged 10 -18 years (Shehab and Al-Jarallah 2005), in pregnant women (Al-Sayegh et al. 2012) and in healthcare providers (Landry et al. 2008). The prevalence of LBP is reported as being variable between countries, i.e. 83.3% in Canada, 60.7% in Sweden and 69.6% in Norway (Landry et al. 2008). Indeed, the burden of LBP in the Arab world is escalating and is nearly equal to that of Western countries (Mokdad et al. 2014). The point prevalence of LBP in high-income Arab countries in primary care varies, i.e. 51.6% in the KSA (AL-Shammari et al. 1994), 59.2% in Qatar (Bener et al. 2013) and 64.7% in the UAE (Bener et al. 2006). In Kuwait, the prevalence of LBP amongst Kuwaiti people is not well-documented (Landry et al. 2008). The Gulf countries share almost all the same traditions, financial relations and spoken language (Fakhr el-Islam 2008), and so Kuwaiti people are assumed to be within the range of reported values from previous studies.

2.2.4 Sociodemographic factors linked with low back pain and disability

The association between social and demographic factors with pain and disability for LBP patients differs between various studies (Kent and Keating 2008). These factors could vary on cultural grounds, such as age and gender in Kuwait.

2.2.4.1 Age

Age is considered one of the most common risk factors for LBP (Hoy et al. 2010), however, some evidence contradicts this. Dionne et al. (2006) discovered that in countries, such as the United Kingdom (UK), Canada, the Netherlands and China, the prevalence of LBP increased with age with respect to more severe LBP. However, Hulst et al. (2005) did not find age to be a predictor for LBP in several countries. Studies by Gesztelyi and Bereczki (2006) and Briggs et al. (2010) also found no association between age and LBP disability in Western populations, and in the US, DePalma et al. (2011) found that LBP reported by patients during clinical visits can occur at any time irrespective of age. These conflicting findings between age and LBP presentation might differ owing to variations in health perspectives and poor recovery expectations of specific age-groups within different countries (DePalma et al. 2011).

The link between structural changes in the spine, as seen on clinical images, variations in age and pain reports from patients do not correlate (Flynn et al. 2011). Boden et al. (2006) performed magnetic resonance imaging (MRI) scans on the lumbar spine of sixty-seven asymptomatic individuals who had never experienced LBP before. The MRI scans showed that about one-third of the subjects had substantial spinal abnormalities. Among individuals under sixty years old, 20 per cent had a herniated nucleus pulposus, while one had spinal stenosis. Of those who were 60 years old and above, overall, there were abnormalities in approximately 57 per cent of the MRI scans, with 36 per cent having a herniated nucleus pulposus and 21 per cent having spinal stenosis and degeneration (DePalma et al. 2011). The NICE guidelines report that linking pain only to structural changes found on medical images is not recommended and MRI imaging should not be used for reassurance, instead, pain should be seen from a biopsychosocial viewpoint (NICE 2021).

A cross-sectional study by Bener et al. (2004) investigated the prevalence of LBP in UAE. Participants` details, such as lifestyle, body mass index and smoking habits were measured for all age-groups and a relationship between these variables and LBP in the younger age group was demonstrated compared to older age, however the reasons were not discussed. However, a limitation of this study was that only a self-reported modified Arabic 24-item version of the Roland-Morris disability questionnaire (RMDQ) was used.

In contrast, a cross-sectional study from KSA by Al-Arfaj et al. (2003) showed opposing results when determining LBP prevalence in adult individuals aged 16 years or more. A questionnaire which included demographic data, back pain details and a social, medical, and general history survey was distributed over 18 months. From the 5,900 respondents, 1085 reported back pain with the prevalence of LBP appearing to increase with age and was increased in depressed people. This study was conducted in one province in KSA, which makes generalisability to this large country and wider difficult. Similar results have been shown by Alhowimel et al. (2021), who reported that the prevalence of LBP increases with age in Riyadh, KSA. Thus, from the above studies, the association between age and CLBP could vary between cultures; however, there are limitations in these studies and further understanding the relationship between age and CLBP in all countries, including Kuwait, would be necessary.

2.2.4.2 Gender

The majority of the existing studies from several countries have found that gender differences do not play a role in the prevalence of LBP (Matsui et al. 1997; Hoy et al. 2010). However, cross-sectional studies revealed that the prevalence of LBP in UAE was higher in women than men, with the women being the principle homemakers (Bener et al. 2003; 2004; 2006) and slightly higher in Qatari females (Bener et al. 2010; 2013). This could be because of the significant contribution of Arabic females in household activities and higher body mass index compared to males (Bener et al. 2003).

This was evidenced in a study from the Kingdom of Bahrain by Maki et al*.* (2021), who revealed that all females in the study (n=14) agreed that their domestic role, pregnancy and childcare responsibilities were causing and aggravating their LBP. It was reported that married females in Egypt evaluate their success when they are able to manage their family life in addition to their employment (Hattar-Pollara and Dawani 2006) and this underlines the importance of household and family activity to this group. The fact that more women than men report LBP in Arabic nations could be due to their efforts to maintain a prosperous household (Hattar-Pollara and Dawani 2006). Another reason reported was that they are less expected to participate in exercise, and lack of exercise is often associated with LBP (Bener et al. 2004). Additionally, females are more likely to develop stress because of work and family responsibilities together, which can contribute to LBP (Bener et al. 2013). Thus, exhaustion due to family responsibilities and work might explain why women are less likely to exercise and experience LBP. Similarly, the prevalence of LBP in women is higher when compared to men in Western cultures, and this could be associated with gender/sex issues rather than cultural issues alone (Kozinoga et al. (2015), together with a variety of biopsychosocial factors (Kamper et al. 2015).

Data from Kuwait reveals that female physiotherapists reported an incidence of LBP double than that of males (Alrowayeh et al. 2010) and LBP was reported by 39% females as a result of pregnancy. This concurs with the results from Al-Sayegh et al*.* (2012), in that LBP is a common issue amongst pregnant females.

Previous SRs by Turner et al. (2000) and Hulst et al. (2005) did not find gender or marital status to be a prognostic factor of LBP as in Arabic studies, which reinforces the notion that the relationship between LBP and gender may be culture specific.

Studies from the UAE by Bener et al. (2003, 2004, 2006, 2010) and from Qatar (Bener et al. 2013) reported on people having treatment in primary healthcare clinics, whereas Alrowayeh et al. (2010) based their results on physiotherapists only, which limits the generalisation of data to other populations. Davidhizar and Giger (2004), and Narayan (2010) have explained that the variation in the relationship between gender and LBP might be accredited to expectations from specific genders in certain cultures or due to social factors.

2.2.5 Health beliefs in Islam and the Arabic people

Individuals' thoughts, behaviours and attitudes about health and illness are influenced by religion and cultural background (Yosef 2008). However, after searching the literature, health perceptions and behaviours towards LBP in the Middle East and especially, the Gulf Region are limited. It is important to understand the context of Arab and Muslim health beliefs of the public about LBP in order to treat them appropriately. It is also essential to recognise that Arabs and Muslims are separate populations; Islam is not an Arab religion, but they are subject to overlap (Yosef 2008). The Qur'an, which is the Holy book for Muslims, has been written in Arabic and is the book that Muslims rely on and includes all the key teachings about Islam and human life (Joshanloo 2013). The obligatory five daily prayers and the call to prayers (adhan) cannot be performed in a non-Arabic language (Ahmad 2001). Muslims will be influenced by the teachings of Islam as a way of life and are part of the culture. Accordingly, Islam could influence how people interact with sickness and a healthcare provider. To reach a state of complete faith in Islam, Muslims have to have faith in Allah (God), his angels, his sent books, his messengers, and the last day and destiny, whether good or bad. In turn, this doctrine helps Muslims to accept illness as God's will (Yosef 2008; Nabolsi and Carson 2011). Moreover, illness is also seen by Muslims as Allah's way of examining an individual`s patience in life, with the promise of a better reward in eternal life (Hammoud et al. 2005).

Nevertheless, this does not mean that they should not seek treatment, as this is considered in Islam as an individual's responsibility to preserve psychosocial wellbeing (Nabolsi and Carson 2011). Giving up on treatment, giving up on life or committing suicide are considered sins. Hopelessness, therefore, should not be widespread in Muslims with persistent disease (Davidhizar and Giger 2004; Fakhr el-Islam 2008; Narayan 2010).

The concept of Allah’s will (Al-Qadar) from Muslims` perspectives is well documented in the literature concerning Islamic culture. According to Wan Zakaria (2015), the principle of Al-Qadar leads Muslims to regard all their actions and achievements as being reliant on the will of God, as Muslims consider Allah as the sole controller of human life. The Holy Qur`an informs the believers that Allah is the only one who deserves to be worshiped because he controls everything; “God gives you life, then He makes you die; then He gathers you for the Day of Resurrection, about which there is no doubt. But most people do not know” (Qur`an 45:26) (Itani 2012, p263), “No calamity occurs on earth, or in your souls, but it is in a Book, even before We make it happen. This is easy for God” (Qur'an 57:22) (Itani 2012, p288). From these versus of the Qur`an, the perception of Al-Qadar might be also misunderstood by some believers feeling that their tragic situation might have resulted from religion itself, which is opposed to Islamic teachings (Wan Zakaria 2015).

Salleh et al. (2009) reported that these negative events (illness or pain) serve a purpose, such as triggering attachment to God as this may be hypothesised to secure a base that can be used for coping. Aflakseir and Coleman (2011) additionally noted another verse in the Holy Qur`an that explains to the believers that the aim of any negative events, including pain or illness, are to examine themselves and they are requested to be patient in facing their problems and perform prayers for spiritual growth; “You who have attained to faith, seek aid in steadfast patience and prayer; for, behold, God is with those who are patient in adversity” (Qur`an 2:153) (Itani 2012, p12).

Therefore, Al-Qadar in the Islamic perspective refers to the God`s ability: where He knew, formed everything and this knowledge encompasses everything even before their existence and all is written in a Book called The Preserved Tablet (As-Salek 1995). Thus, Al-Qadar is the fate of things that is predestined to everyone, and according to Wan Zakaria (2015), some Muslims have unintentionally misinterpreted the true meaning of Al-Qadar, such as watching their fate to occur without responding to it. However, they should be responsible for change when required, as the Holy Qur`an tells the believers “God does not change what is in a people until they change what is in themselves” (Qur`an 13:11) (Itani 2012, p123), indicating that people must take the first step to make changes, after which God will offer help and support (Wan Zakaria 2015). As Salek (1995) reported, humans have their free will given by God. Therefore, people must begin their own actions before and after Al-Qadar happens. For example, if the Al-Qadar dictates that people will have CLBP, they need to take responsibility to respond by initiating control of their condition, changing their behavior, following recommendations from their physiotherapists to resolve their issues, all while submitting their actions to God.

In surah Al-Kahf from the Holy Qur`an it says; “And never say of anything, I shall do such and such thing tomorrow. Except (with the saying), If Allah wills" (Qur`an 18:23-24) (Itani 2012, p148). Here, Kathir (1999), interpreted this verse to mean that Allah shows us when deciding to do something in the future it will only happen if Allah wills it. Thus, this means Muslims might work with Allah`s plan in confidence that Allah will help him. This strong belief in Allah`s will makes Muslims patient so that they are ready to face any difficult conditions without fear and are reassured that Allah will cure them when they are unwell or in pain (Wan Zakaria 2015), i.e. “And when I am ill, it is He who cures me” (Qur'an 26:80) (Itani 2012, p291). This is seen as cooperation between individuals and God, such as believing in God, accepting his will and taking responsibility to self-managing, and is regarded as a Collaborative style, as highlighted in the next section.

In the Sahih al-Bukhari Book translated by Khan (1990), it contains Hadiths, which are considered the second source of Islamic legislation after the Holy Qur`an (Rasyid et al. 2021). Hadiths of Prophet Mohammad (PBUH) are narratives of the sayings, actions or customs of Prophet Mohammad (PBUH) and provide further explanations of the Qur’an (Rasyid et al. 2021). The book has several Hadiths of the prophet commanding believers to take steps to protect themselves and against disease. For example, "If you realise that epidemic is exploding in a specific land, do not enter it and if it happens in a land where you are, do not leave it” (Khan 1990, p5678). Furthermore, some Arabs asked the Prophet: " O Messenger of Allah, shall we heal (our ill)?’ He said: ‘Yes, o worshippers of Allah! Use remedies. For indeed Allah did not make a disease but he made a remedy for it, except for one disease “Old age" (Majah 2010, p1136). The Prophet also recommended all Muslims to be physically active and exercise to maintain body strength and health (Khan 1990), saying; teach your children skills, such as archery, swimming and horse riding (Wabuyabo et al. 2015). Thus, these quotations from the Hadith book show that Islam encourages individual to take responsibility to treat themselves, engaging in physical activity and exercising.

2.2.6 Coping response strategies among Muslims compared to Western culture.

There is experimental evidence that shows that religious and spiritual coping approaches can impact social, psychological and physical alterations in people when they face obstacles (Loewenthal et al. 2001; Nairn and Merluzzi 2003; Koenig et al. 2004; Pargament et al. 2005). Most of these religious coping style studies have been conducted in countries with mostly Judeo-Christian cultures and have studied general pain. Religious coping, as previously shown, involves relying on religious beliefs to help coping with physical discomfort or emotional stress (Aflakseir and Coleman 2011), and activities such as attending church and praying can be forms of religious CS (Andersson 2008). Religion and faith are therefore sources of CS for believers to manage a stressful situation. Hence, the next section discusses differences between three religious CS for example i.e. self-directing, deferring and collaborative CS (Pargament et al. 2005).

In the self-directing style, the responsibility falls on individuals to resolve their problems and to make efforts to solve them. Religious structure is absent, and the connection between God and patients is weak compared to the other two styles. In the deferring style, people submit their illness problem-solving responsibility to God, and they wait for God`s solutions to emerge. The collaborative style is when the problem-solving is shared equally by the individual and God, and so both play an active role in the problem (Pargament et al 2005).

Among these three religious' styles, Salleh et al. (2009) and Dedeli and Kaptan (2013) argued that the collaborative approach is the only religious CS that is seen as a positive coping with stress. This is where individuals cooperate with God to seek support and balance their own efforts to self-manage whilst seeking support from others. Aflakseir and Coleman (2011) described this style as having a secure relationship with God, and a feeling of spiritual connectedness with others. However, deferring coping style has been considered as a negative coping style and been argued as an insecure relationship with the God (Voytenko et al. 2021). The reason is that the entire responsibility is shifted to God, with individuals often blaming God for difficulties and sometimes feeling abandoned by Him (Salleh et al. 2009; Dedeli and Kaptan 2013).

There is insufficient information from studies about the utilisation of religious and spiritual CS in people with LBP in Arabic and Muslim cultures. Findings from Western studies showed that the most common religious CS used by patients with chronic conditions include reading the Bible, meditation, performing prayer, relaxation and attending church (Rippentrop et al. 2005). Rippentrop et al. (2005); Dezutter et al. (2011); Lysne and Wachholtz (2011) indicated that individuals reported praying more when their pain was more severe or when medical treatment failed. Dezutter et al. (2011) illustrated that this increase in spirituality might be linked to the positive effect of prayer, where prayer will establish a positive re-assessment of pain, and therefore will be more strongly linked with pain tolerance than with severity of pain. For example, they would assume that the patient experiences the same level of pain, but they are able to cope with the pain more with less restriction with their daily life (Dezutter et al. 2011).

Ferreira-Valente et al. (2020) examined the associations between spirituality, pain and function, and the associations between spirituality and pain CS in a cross-sectional study, involving 62 Portuguese adults with chronic musculoskeletal pain, including CLBP. The study used valid and reliable PROMS, such as Numerical Pain Rating Scale (NPRS), The Portuguese Medical Outcomes Study 12-item Short Form Health Survey (measuring physical and psychological), the PCSQ short form (CSQ-14) and the five-item Spirituality Scale (SS), which has not been validated for chronic musculoskeletal pain, potentially undermining the findings. The study found a weak and nonsignificant associations between spirituality and pain, and physical function and passive CS. Spirituality as hope and a positive belief toward life was moderately and positively associated with better psychological function and CS ignoring pain sensations and coping self-statements. Moreover, spirituality as a search for meaning and sense of purpose was positively and moderately associated with the CS of task persistence. These findings, therefore, suggest that spirituality may have a positive effect on some aspects of chronic pain, and possibly encourages the utilisation of some active CS. However, these results contradict those of Mercado et al. (2005), who showed that praying and hoping lead to greater disability, and these dissimilarities might be due to using different PROMS for measuring praying and hoping. Ferreira-Valente et al. (2020) reported the small sample size as the main limitation of this study, limiting the generalisability of the data.

Generally, Islamic teachings support people to be tolerant, calm, to be active through prayer, and to trust and submit to God for guidance in times for need. The Qur`an has shown us that when individuals face obstacles that test the believer and asks them to be patient, and when they do so they will be rewarded by God. The Qur'an and its traditions provide specific recommendations linked to coping with obstacles to feel better through the remembrance of God, performing prayers, reading verses of the Qur'an and fasting (Aflakseir and Coleman 2011). Behavior and physical health therefore could be influenced by these religious coping beliefs and values that in turn strengthen human`s psyche and soul (Qureshi et al. 2020).

Muslims believe that the Creator is the mighty God, and each person has to take care of their body (Yosef 2008). A common belief within Muslims is that illness and pain are caused by God, leading them to seek His help and express gratitude for good health, while also fearing God as a means of a CS (Salleh et al. 2009; Dedeli and Kaptan 2013). Aflakseir and Coleman (2011) noted that the Qur’an and the Sunnah provide guidance on feeling better and coping with difficulties, including the use of certain herbs, honey or practices like Hijama, (a form of Islamic medicine involving the use of suction cups on the body, where the cups are removed, and the therapist performs small scratches to repel toxins (Sajid 2016)), and through the remembrance of God. Additionally, Islamic cultures appear keener to accept pain and sickness as a source of redemption for past sins, leading individuals to cope with pain by seeking help from God more frequently than non-Muslim populations (Nadar et al. 2016).

Hussain and Cochrane (2003) explored how Asian Muslim women in southern England cope with depression and reported that religious CS was the most common technique used in addition to socialising with others. Participants also reported using praying for support and reading verses from the Qur’an to request for protection from symptoms. However, the authors noted the sample size was small, with ten Asian females and no males, therefore limiting generalisability of the data. Loewenthal et al. (2001) examined how different religious factors were relevant in coping with depression amongst different cultural-religious groups in the UK, in 282 participants consisting of Christians, Jews, Muslims and Hindus. The findings revealed that Muslim groups believed considerably more in the efficacy of prayer in coping with depression compared to other faith groups and that Muslims were likely to pray and use faith rather than seeking help from healthcare professionals. Furthermore, the study showed that social and cognitive CS were seen as more effective than purely religious resources, and those who used religious CS were more likely to seek social support, and to a lesser extent professional help.

Praying and hoping as CS are integral parts of Muslim religion, and religion is important in Kuwait and worth exploring to contextualise the current data. However, no study on religious CS, such as praying have been documented in Kuwait, with only two studies from the Gulf region. Qureshi et al. (2020) reviewed 48 studies based on religious CS in KSA and concluded that traditional Islamic religious practices are the most common forms used to cope with pain, recommending integration of spiritual and religious therapies into the health professions` curriculum. Maki et al. (2021) explored the beliefs and experiences of 18 Arab Muslim patients with CLBP in the Kingdom of Bahrain who were receiving physiotherapy. The study revealed that patients utilised active and passive CS to deal with their pain. The active CS (9 respondents), were walking, visiting mosques for prayer, and ignoring and distraction techniques. The passive CS were heat treatments, icepacks, medication, ointments and/or herbal oils, rest and sleep, and were used by the majority. The study noted that most patients, when in pain or experiencing emotional distress, used religious coping statement phrases i.e. ‘remembrance’, to manage their pain rather than religious CS. More than the half of the participants reported perceiving benefits from physiotherapy treatment, with the remainder reporting that physiotherapy was not useful for pain reduction. The data showed that most participants had received more than one physiotherapy course and were uncertain about the long-term benefits of physiotherapy. The authors concluded that pain-related beliefs, FAB and catastrophising could be influenced by religious and cultural beliefs, and they recommended using active forms of religious coping for the treatment of patients` with CLBP in Arabic Islamic nations. The study also suggested that participation in religious occasions and visiting mosques for praying could be considered as a positive active CS. However, the study had some limitations, including a gender imbalance of 4 males and 14 female subjects, and a small number of participants that may not be representative of a wider population of CLBP patients in Bahrain. The authors proposed that males would be unlikely to discuss their issues in a focus group which contains females and is led by a female researcher. Although the authors discussed the credibility of the findings, they did not clearly address whether the recruitment of participants and data reached the principle of saturation and as such may influence the quality of the data (Saunders et al. 2018), although the concept of data saturation is contested by some (Braun and Clarke 2021c; Hennink and Kaiser 2022).

2.2.7 The Psychosocial and physical effect of praying

Prayer serves as a CS and varies in form across cultures and religions (Andersson 2008, Henry 2015). Although prayer holds significance for religious Christians and Jews, it is usually performed less frequently in the main than the Islamic mandatory five times prayer per day (Koenig and Al Shohaib 2014). Muslims engage in physical movements, such as standing, reciting verses from the Qur`an, kneeling and prostrating toward Makkah (Chamsi-Pasha and Chamsi-Pasha 2021)**.** Prior to performing prayers**,** Muslims have to engage in ablution, which involves washing the mouth, nostrils, face, arms and hands, head, the inside and outside of the ear and feet (Hamdan 2010). However, to the author`s knowledge, prayer in other religions does not require ablution. Muslims also engage in non-obligatory prayers without physical movements, such as ‘the prayer of need’ which is performed in times of difficulties for seeking solutions (Javaheri 2006) and ‘remembrance’ to show remembrance of God in one’s heart, through recitation and chanting (Hamdan 2010).

Prayers in general may give individuals spiritual energy that potentially influences them physiologically and psychologically (Breslin and Lewis 2008), and thus have the capability to heal (Henry 2015). Asadzandi (2019) demonstrated that from an Islamic viewpoint, the soul has been given by God to each human being, which gives him awareness, perception of pain, movement, and consciousness. Prayer can therefore be performed to energise and influence the soul, which could interrupt the pain cycle, thus improving physical and mental health (Asadzandi 2019). This spiritual energy is believed to stem from the direct connection with God, serving as a powerful emotional and motivational force (Ladd and McIntosh 2008). This concurs with the Islamic beliefs as the Holy Qur`an shows that the Islamic doctrine promises that prayers deeply connect individuals with the God and make them even closer to Him (Hamdan 2010).

Prayers form a sign of faith that could yield spiritual energy that might heal and change people. It has also been stressed in Islamic beliefs that prayers solidify faith in God, and the believer can be transformed and empowered by faith (Henry 2015). The Qur’an reveals how faith changes and supports those who pray: ‘‘Those who believe, and do good deeds, and pray regularly, and give charity—they will have their reward with their Lord; they will have no fear, nor shall they grieve’’ (Qur'an 2:277) (Itani 2012, p23).

Empirical studies from both Islamic and non-Islamic cultures showed significant links between religious CS and measures of mental health, psychological distress, and well-being when facing difficulties. McCullough (1995) and Watts (2001) argued that people who prayed had positive expectations about life stressors because they could re-appraise stressful situations and calm their mind and body. Similar findings were revealed in Islamic cultures by Azhar and Varma (1995); Khan (2006) and Hamdan (2010), who all concluded that prayers by Muslims can bring a sense of tranquillity and relaxation. Furthermore, individuals could feel happiness, satisfaction and inner peace from performing prayers (Ghufran 2011). This notion was highlighted in the Holy Qur`an ‘‘And those who are constant, seeking the pleasure of their Lord, and keep up prayer, we have given them secretly and openly and repel evil with good’’ (Qur'an 13:22) (Itani 2012, p124). McCullough (1995) ascribed this subjective well-being due to the individuals’ feeling that God provides answers to prayers.

Whether the subject of praying and hoping as CS were conceptualised as active or passive is controversial. For example, Mercado et al. (2000) stated that praying and hoping is a passive CS response to pain, as they rely on an outside source to take responsibility to manage the pain. However, praying to God for support has been described as a positive CS as it can support individuals to accept and adjust to illness or distract negative thoughts (Andersson 2008; Bussing et al. 2010). Therefore, praying and hoping might be seen differently in an Islamic society. For instance, the Islamic prayer begins with a physical activity, as Muslim men usually walk to the mosques for prayer, and praying in a group inside the mosque is seen as advantageous as they are rewarded with more good deeds than those who pray alone (Weatherhead and Daiches 2015). Additionally, praying involves socialising with others who are praying and talking with friends every day after performing prayer. (Tab et al. 2017). Pargament et al. (1998) argued that praying in church is a way of connecting with other people and can be viewed as an active form of praying. Performing prayer at a mosque has been emphasised by prophet Mohammad (PBUH) as a must for men, whereas it has been decided that it is better for women to pray at their homes (Hussain 2019). Women, however, usually pray at mosques on Islamic occasions, such as during Ramadan, and Eid`s prayer (Hussain 2019).

Praying to God in the context of Islam can also be seen as a form of physical activity as prayer consists of a series of postures and movements, such as standing, bowing, prostration and sitting, consecutively (AlAbdulwahab et al. 2013). These movements and postures activate the human body's muscular system and can stimulate bodily calmness to enhance health and well-being (AlAbdulwahab et al. 2013; Tab et al. 2017 ; Nazish and Kalra 2018; Fatima et al 2022).

Similar findings were reported in a SR by Fatima et al. (2022), which showed that Muslim prayer enhances health and physical fitness levels, with specific prayer positions increasing blood flow which may prevent stiffness. Ten studies with different design were included in the review, i.e. two RCTs, two reviews and six cross-sectional studies. The methodological quality of each study, however, was assessed using the Pedro scale, which is a valid tool to assess the methodological quality of clinical trials only and may be a limitation of this review.

Summary of sections 2.2.5, 2.2.6 and 2.2.7.

Islam influences individuals how to react and cope with their stressors, including pain, and this is often achieved through praying. The concept of God`s will (Al-Qadar) leads Muslims to regard all their actions and achievements as reliant on the will of God, as denoted in several versus from the Holy Qur`an. However, individuals still have their own free will and can decide whatever they want to do. Individuals have never been asked not to respond to their illness, and Islam encourages people to engage in physical activity and exercises, to start changing themselves and God will help in turn, and they should take responsibility for self-managing as every illness has a cure that has been created by the God.

The most common religious CS used by individuals with chronic conditions in western countries are reading the Bible, meditation, performing prayer, and visiting church. However, several religious CS toward illness are emphasised by Islam, such as praying, trusting and submitting to God for guidance, being patient, reading verses of the Qur'an, fearing God, and fasting. Prayers whilst socialising with friends inside church or mosque are considered active forms of religious coping with illness from both Western and Islamic perspectives.

Prayer can take different forms in each religion, and praying is most performed by Muslims. Prayer has several advantages from both Islamic and Western cultures, such as enhancing individuals` physical and mental health, and it could interrupt the pain cycle, so the person is more able to tolerate pain and change their behaviour. Praying to God and hoping to be better has been conceptualized as a passive CS from individuals with non-religious perspective, claiming that patients defer responsibility to an outside source and wait for God`s help. Praying to God for support, however, can be seen as an active CS as a collaborative style, because they cooperate with God to seek support, and prayers help individuals to accept and adjust to illness, to distract thoughts, and seek strength before employing a change.

2.3 Treatment for chronic low back pain

Effective CLBP interventions are vital to manage this major health problem and the resultant economic burden. Physiotherapists face challenges as there are a great variety of accessible treatment options for LBP (Pransky et al. 2010), however most approaches have not provided long-term benefits, except for exercises (Foster 2011). Physiotherapy is a key service that should implement a targeted treatment for LBP and avoid a ‘one size fits all’ approach (Foster 2011).

2.3.1 Healthcare orientation and patients` treatment

Physiotherapy services are delivered in Kuwait via the public healthcare system, or the private sector, and healthcare is either self-funded or paid for through insurance. No study has been conducted in Kuwait to explore CLBP management from either physiotherapists or patients’ perspectives. Al-Enezi and May (2017) investigated what influences musculoskeletal physiotherapists in selecting patient treatments. A questionnaire with 109 respondents out of 139 potentials (78% females) showed that the management of musculoskeletal pain in Kuwait generally follows the knowledge which physiotherapists gained during undergraduate and postgraduate training.

These included active therapy approaches, such as hydrotherapy and exercise therapy, and passive therapy approaches, such as electrotherapy and manual therapy with few treatments being evidence based. This study only included Kuwaiti born physiotherapists, however, there are large numbers of non-Kuwaiti physiotherapists working in Kuwait and therefore the data is not representative of all physiotherapists working in Kuwait and unfortunately the survey did explore the reasons for choices.

The literature documents examples of physiotherapists' attitudes and beliefs about treatment provided for people with LBP (Bishop et al. 2008). A qualitative study of six female UK physiotherapists by Daykin and Richardson (2004) demonstrated that physiotherapists' views were that pain in CLBP patients was framed around the biomedical model and that physiotherapists perceived people with CLBP had a complex pain presentation and were difficult to treat. This contributed to them feeling disappointed, frustrated and with low self-efficacy and outcome expectancy beliefs regarding these patients. This concurs with Main and George (2011), who reported that most physiotherapists adopt a biomedical model when treating a chronic condition and proposed that this may be because most of their training was built on a biomedical rather than a biopsychosocial approach.

In addition, a SR and qualitative meta-synthesis by Synnott et al. (2015), revealed that some physiotherapists lacked confidence and necessary skills to discuss psychological factors with patients with LBP, which may suggest a lack of communication skills with patients with psychological issues (Daykin and Richardson 2004). It has been proposed that physiotherapists should adhere to clinical practice guidelines (CPGs), as these are based on evidence-based recommendations to support decision-making for appropriate treatments for people with LBP (Murad 2017). Similarly, in a SR, the effect of implementation and adherence to CPGs by physiotherapists was found useful as it decreased the total number of healthcare visits, reduced expenditure of medications and procedural interventions in patients with LBP (Fillipo et al. 2022). Nevertheless, contradictory results were found in improving pain and disability; hence, the benefit of adhering to CPGs remains unknown (Synnott et al. 2015).

Currently, Physiotherapists apply wide-ranging treatments such as pain education, exercise therapy, behavioural therapy and SMS for treating CLBP. Physical therapy agents, such as heat/cold, traction, laser, ultrasound, short wave, interferential and transcutaneous electrical nerve stimulation, corsets or belts have not been recommended for the treatment of CLBP (NICE 2021). Gardner et al. (2017) reported that support of both passive and cautious approaches by physiotherapists could result in patients developing unhelpful views about activity and withdrawal from a patient-focused SMS. Thus, considering a biopsychosocial approach for treatment is key before providing SMS for people with CLBP. Screening at first point of patient contact for risk of psychosocial factors could be worthwhile as this may facilitate shared decision-making about management (NICE 2021), and identifying patients at risk of poor clinical outcomes, thus offering a way of making care more efficient and effective (Hill and Fritz 2011). Establishing how valid and clinically useful current psychological screening measures are seen as a priority for research regarding psychologically informed practice (Main and George 2011; Piironen et al. 2016). A model that targets treatment on the basis of chronicity risk prognosis is the STarT Back screening tool (SBST) (Hill et al. 2008a; Foster et al. 2013), which is designed to support primary and first-contact care decision-making, and which classifies LBP patients into three groups, i.e. low, medium and high risk, each with its own treatment pathway (Hill et al. 2008b; NICE 2021).

Guidelines from NICE (2021) recommend that patients who are at risk of developing persistent LBP as a result of their stratification need to be given reassurance, advice to keep active and offered clear guidance on SMS, which contains information about the nature of LBP and is tailored to their needs and abilities. However, those who are at high risk should be given intensive support from healthcare providers and exercise programmes which consider patients’ needs and preferences. Furthermore, cognitive behavioural therapy (CBT) should be considered as a part of the treatment plan in addition to exercise therapy and manual therapy (NICE 2021). A CBT approach could modify the way the patients cope, as applying psychological principles to alter thoughts and behaviour of chronic pain patients, may reduce the distress they experience and enable them to lead a more productive and satisfying life (McCracken and Turk 2002; Jones et al. 2006). The approach is also built on the assumption that developing and applying a range of CS for managing pain will improve adjustment to chronic pain and involves the notion that pain is manageable (Haythornthwaite et al. 1998a).

Based on the biopsychosocial model of disease, CBT focuses on reducing disability by modifying cognitive processes and behavioural responses to pain through education (Linton 2000). The physiotherapists’ educational role is related to chronic pain, and the link between thoughts and emotional and physical responses, such as guided imagery, desensitisation and attention control exercises (McCracken and Turk 2002). Furthermore, it educates the patient on how to prevent pain relapse, to sleep well and manage their gains. The instructional role consists of teaching to help change negative dysfunctional thoughts, helping them to adjust and to work toward positive behavioural goals, such as activity pacing and goal setting, and providing skills for relaxation, CS, and the promotion of SMS (McCracken and Turk 2002; Ehde et al. 2014).

A SR by Richmond et al. (2015) revealed that the CBT approach was better than other guideline-based active treatments and the ‘no treatment’ group in pain, disability and quality of life (QOL), at any age and for any duration of pain. Similar findings were obtained by Cherkin et al. (2016) who compared the CBT approach to usual physiotherapy care in people with CLBP and reported that CBT resulted in greater improvement in back pain and functional limitations at 26 weeks. Hajihasani et al. (2019) investigated the effect of adding CBT to routine physiotherapy rehabilitation treatment on pain, disability, functional capacity and QOL for people with CLBP. Ten RCTs were reviewed of which 7 were high quality studies and the remainder were of good quality. The study revealed that half of the studies showed that combining CBT with physiotherapy resulted in benefits of pain and disability reduction, improved functional capacity, and enhanced QOL when compared to physiotherapy treatment alone. Nevertheless, the other half showed that no benefit was achieved from adding a CBT component to routine physiotherapy. Furthermore, CBT approaches were found to be effective in reducing depression symptoms, but not adding to the benefits of physiotherapy regarding depression reduction. A strength of the review was that it followed the PRISMA guidelines, but unfortunately the limitations of the study were not discussed. In addition, only five of the included studies examined the effect of CBT on depression symptoms, and perhaps this small number of studies make it difficult to draw a conclusion about depression.

Graded exposure therapy is an approach that targets patients' fear. According to George and Zeppieri (2009), this includes delivering a thorough education to the patients to decrease their fear of certain behaviours, for example, bending forward, and supporting them to engage in their most feared behaviour and motivating them to use more active CS. This was found to be more effective than graded exercises alone in relation to pain intensity, functional disability, and pain catastrophising.

Controversial results were found in a quasi-experimental study by George et al. (2010) who compared graded exercises alone with graded exposure therapy for 33 patients with CLBP (graded exercises group, n=15, graded exposure group, n=18). This study had contradictory findings to George and Zeppieri (2009). For example, George et al. (2010) found that the two approaches provided similar effects in addition to conventional physiotherapy treatment in terms of reducing pain and disability. The reduction in pain was associated with depression reduction, and the change in disability was associated with a change in catastrophising. The study, however, had several limitations, such as having no control group, and adding a control group in a quasi-experimental approach would increase the validity of causal inferences (Andrade 2021). The nature of the quasi-experimental study did not allow a patient randomisation process, which could increase the possibility of selection bias (Andrade 2021). Moreover, although the study reported no statistical differences between those completing versus those not completing the course of treatment, the study did not report if there were any differences in loss to follow-up between the groups, nor the reasons for loss to follow-up.

2.3.2 Self-management strategy programme for chronic low back pain

A SMS programme has been strongly recommended for people with LBP to promote patient-centred-care by implementing adequate education for people with LBP who are at risk for persistent pain and disability (Buchbinder et al. 2018). SMS in some countries have been widely adopted to mitigate the increase in healthcare costs by empowering patients to be involved actively in managing their condition (Richardson et al. 2014). Guidelines recommend using SMS as part of the biopsychosocial model for CLBP treatment (NICE 2021), emphasising tailored advice to patient needs as a form of SMS (NICE 2021).

As part of SMS education is provided to patients (Peek et al. 2016) but guidance on what this advice and education should comprise is, in some cases, limited (Cameron and Stewart 2011). In a SR of 41 studies, Lim et al. (2019) reported that patients with LBP need clear, consistent and tailored advice and education on diagnosis, treatment options and SMS. Consequently, since SMS are advocated by several guidelines for people with LBP, firstly, the exact nature of the SMS needs to be clearly understood.

The literature on SMS is multifaceted and SMS lacks a single definition (Stewart et al. 2014) .The Stanford courses on SMS developed by Lorig et al*.* (2003) are well-recognised (Lawn and Schoo 2010) for enhancing self-efficacy and increasing patients` motivation by engaging patients in activities (Battersby et al. 2010). Thus, the key objective of SMS is to modify patients` behaviour, assisting them in acquiring certain SMS skills, which entails taking day-to-day responsibility for their condition. This involves educating patients on exercise for maintaining and improving strength, flexibility and endurance, healthy eating habits, and dealing with frustration, isolation, fatigue and poor sleep (Lorig et al. 2003). Since CLBP fluctuates, specific patient treatments are not the concerns; instead, the successful management of persistent LBP is viewed as the ability to get support from and to form a partnership with healthcare professionals (Lorig et al. 2003; Newman et al. 2004), and to aim for better QOL despite the pain (Kongsted et al. 2021).

Another skill is a problem-solving ability and decision making and is key to self-management and this needs to be combined with delivering knowledge of the condition (Lorig et al. 2003). One way to accomplish this is to set goals that can influence behaviour as part of SMS, that puts the patient in control of the condition and this approach can potentially reduce the cost of treatment (Newman et al. 2004). Escolar-Reina et al. (2009) reported that application of SMS is a long-term process for patients and can be in the form of unsupervised exercises (Machado et al. 2017). These aim to empower patients to be responsible for themselves and teaches them the required skills to resolve problems, which can lead to the patients engaging in exercises and accepting an active lifestyle (Grady and Gough 2014).

Various interpretations of SMS exist; however, many have generic applications and cover several conditions rather than being specific to pain or specific conditions, such as LBP (Cameron and Stewart 2011). Table 2.1 below shows some of the diverse definitions of SMS found in the literature. Boyers et al. (2013) and Stewart et al. (2014) focus specifically on pain, but the others are generic and focus on managing chronic disease. Common themes appear amongst the definitions and are detailed in Table 2.1.

Table 2.1.Definitions of self-management strategies

Barlow et al. (2002)	Self-management is the ability of an individual to manage everything to do with a chronic condition, i.e. not just the symptoms, treatment and physical consequences but also the psychosocial results and changes in lifestyle. Efficacious self-management means that an individual can monitor his/her condition and respond cognitively, behaviourally and emotionally in a way likely to maintain a satisfactory quality of life, and thus, establishing a process of continuous self-regulation.
Stewart et al. (2014)	Self-management is multidimensional and occurs when an older adult accepts the need to self-manage their pain and has the will and ability to do so, supported, when necessary, by others. The older adult experiencing persistent pain becomes active in his/her own treatment, developing the necessary skills and understanding on how they respond to symptoms. The individual initiates techniques and takes part in their own symptoms to control the issue, utilising pain management approaches that improve their physical, psychological, and social health.
Wilkinson and Whitehead (2009)	The ability of the individual, supported by family, healthcare professionals and the community, to manage symptoms, treatment, changes in lifestyle and the cultural, psychosocial, and spiritual penalties of a health condition.
Boyers et al. (2013)	A single or multi-technique with the aim of minimising the impact of chronic pain on everyday life. It may be taught by a health professional, learned by the patient, or both.

There is a plethora of different SMS treatment approaches for CLBP, and many include physical activity and education regarding medication, relaxation, and CBT. A

SR by Miles et al. (2011) found that the mediating effect on SMS outcome has been demonstrated for physical activity and catastrophising factors. The study concluded that self-efficacy, physical activity, catastrophising and depression are important factors which need to be accounted for in self-management programme. Carnes et al. (2012) investigated the most effective components of self-management interventions by evaluating 46 RCTs, (12 related to LBP), in different countries. Similarity was found between the psychological factors and pain intensity by Miles et al. (2011) and those in this study and the evaluations of self-efficacy, together with the inclusion of global health and intensity of pain. The conclusion was that most studies showed the best outcomes were generated by short group programmes that included CBT or other psychological components delivered by healthcare professionals, and most studies had physical activity and education components. The review achieved most of the PRISMA criteria checklist. However, the review did not list the exact outcome measurements they used to draw their conclusions. A further limitation was that the review included few studies with high quality evidence which may affect the validity of the outcomes.

Haas et al. (2005) conducted a prospective, parallel-group, RCT to assess the effectiveness and cost-effectiveness of a self-management programme (SMP) for pain and functional disability in elderly people with CLBP. Participants (n=1209) were divided into a chronic disease self-management programme (n=60) and a control group (waiting list for 6 months n=60). The SMP was a weekly 2.5 hours teaching which was community-based for 6 weeks, delivered by two trained lay people. The aim was to improve patients` self-efficacy covering concepts including education about their chronic conditions, exercise, relaxation, fear reduction and access to community resources, The study concluded that there were no benefits for the chronic disease SMP over a waiting list control for reducing pain, improving self-efficacy, general health and self-care attitudes in older Americans with CLBP. Even though the study used valid and reliable PROMS and stated the dropout rate for each stage, it revealed several limitations, including all elderly females, with no males, thus the findings cannot be generalised to men nor to different ages. In addition, the therapists, assessors, and participants were not blinded to the allocation process and there was no adequate follow-up which could generate data bias.

Du et al`s SR (2017) established that there is moderate-quality evidence for the effectiveness of SMS programme on pain and disability for patients with CLBP. Thirteen CLBP RCTs were included, with the majority being theoretically driven, i.e. 6 based on CBT and 2 on self-efficacy. Regarding the education component of the SMS, 8 were face-to-face, and 4 were internet based. The review concluded that a SMS programme has a long-term moderate effect on pain intensity, a moderate effect for a short-term period on disability and a small effect on disability for a long period. Specifically, those SMS RCTs which were based on CBT and self-efficacy showed moderate effects in reducing pain and disability, whilst those not theory based had no statistically significant effect on pain or disability. The educational process for SMS, whether delivered through face-to face or the internet, had a similar moderate effect on pain and disability. The main strength for this review is that it met all the checklist criteria from PRISMA, except for item “protocol and registration”. The author, however, acknowledged some limitations that could affect the findings, such as some meta-analyses had small numbers of RCTs which may weaken the generalisability of the conclusions.

Cooper et al. (2009) explored 25 CLBP patients’ perceptions of SMS who underwent physiotherapy 6 months previously in the UK, using semi-structured interviews either in their home or on NHS premises. The author aimed to discover whether physiotherapists facilitated patients to do SMS and what could be done to enhance the SMS. Themes that emerged were that SMS were not applied by the participants regularly, and that there was a need for self-management support following discharge from physiotherapy. Although exercises were the most prescribed SMS, participants perceived that physiotherapy had little effect on their CLBP management post-treatment. This was perhaps because the treatment was not based on theory, such as in the findings noted by Du et al. (2017) on CBT and self-efficacy, but this is speculative. Several limitations were noted as the exclusion criteria were not clearly identified, in Kawi, (2014a) and Liddle et al. (2009), and the participants’ recruiting process was based on physiotherapists’ self-selection which may indicate bias.

Kawi (2014a) using a qualitative design examined the perceptions of 110 CLBP patients of their SMS in a cross-sectional study. The most common CS used by participants for SMS were medications, exercise, applying heat and modifying their activities. The self-management support that the patients received from their GPs was being prescribed medications, and exercises that were delivered by their physiotherapists. However, most patients reported that they received minimal support from their friends and family. Follow-up with healthcare professionals is the least frequent SMS reported by the patients. The study’s weaknesses were lack of description of the exclusion criteria and whether data saturation was achieved.

Similar results were found by Crowe et al. (2010) who explored the SMS of 86 (64 CLBP patients and 22 healthcare professionals) and how healthcare professionals identified their role in facilitating self-management. The patients’ results revealed that medication Non-Steroidal Anti-inflammatory Drugs (NSAIDS), exercise and heat application were the most common SMS utilised. However, physiotherapists described core strength exercises as the main SMS strategy, whereas GPs considered their three principal roles as: (i) prescription of pain medication; (ii) providing sickness certificates; and (iii) referral to specialists. Limitations of the study were that patient details being missing.

2.3.3 Biopsychosocial model and self-management strategies

The biopsychosocial model enables the understanding of definitions of SMS (Battersby et al. 2010). Most of the definitions from Table 2.1 are linked to the biopsychosocial approach and take into account the wider context of an individual’s daily life (Wilkinson and Whitehead 2009; Boyers et al. 2013; Stewart et al. 2014). Barlow et al. (2002) presented SMS as the individual’s responsibility to manage the biopsychosocial effect on their lifestyle by themselves. This is in relation to the biopsychosocial model that considers physical, social and psychological factors of health management. Nevertheless, the whole social picture is not detailed, such as referring to support, and this does not reflect the partnership approach that is part of SMS. A partnership also exists between the patient and healthcare professional and is an integral part of SMS, which is frequently discussed as requiring collaboration between the two (Johnston et al. 2011). Dealing with the consequences of a long-term condition may present difficulties and SMS as a partnership is not simply telling the patient they must manage the condition themselves (The Scottish Government 2009). It is important to recognise that SMS can be enhanced by support from others, including family and friends, which may empower patients to obtain control over the biopsychosocial burden of life with a long health condition (Johnston et al. 2011).

People who live with a chronic condition see a partnership with and the support of healthcare professionals as a key part of SMS. This was revealed by Dwarswaard et al. (2016) who conducted a thematic synthesis of 37 qualitative studies (19 rheumatic disease), to understand how patients viewed support as part of SMS. The study showed that patients valued information about the condition and to receive advice on integrating it into their daily lives. In addition, acknowledging the emotional impact and how it differs amongst individuals is seen as important, and patients valued the support of a partnership. These studies offer insights into what people need in the way of support and precisely what is involved in self-management support. However. this study does not include people specifically with CLBP and its unknown if these data would be similar in people with CLBP.

The value of support in SMS is highlighted by Wilkinson and Whitehead (2009) who reports that SMS includes support which is related to healthcare professionals as well as family. The context of this review was nursing practice dealing with diabetes and heart disease. However, the same view is held of healthcare professional support in relation to chronic pain, such as arthritis and back pain (Stewart et al. 2014),

According to Stewart et al. (2014), SMS is seen from three perspectives, i.e. as an intervention, a day-to-day behaviour, and an outcome. The SMS approach is often underpinned by self-efficacy and the idea that the patients` control involves reduced outside interference rather than only pain control. A person experiencing daily pain must receive information about the condition, be supported and know how to access support resulting in experiencing a better QOL and wellbeing, and this highlights the complexity of SMS. Both Stewart et al. (2014) and Dwarswaard et al. (2016) stress the need for information about the condition to become part of daily life. Although the insight into understanding the SMS of pain given by Stewart et al. (2014) is valuable, most of the literature on SMS is concerned with psychology and nursing.

In relation to SMS within physiotherapy, a SR of 57 articles by Richardson et al. (2014) explored what SMS actually means, what roles physiotherapists have, and which theoretical models are best fitted to the self-management concept. The condition in which SMS was most often used was arthritis, with the most frequent focus of SMS by physiotherapists being on physical activity with self-efficacy often being measured. Kongsted et al. (2021) reported that SMS are concepts connected to Bandura's social cognitive theory on self-efficacy in which patients believe in their ability to influence events that affect their lives and are regarded as the core of human motivation, performance and emotional wellbeing. Social cognitive theory was therefore the most frequently used theory by physiotherapists as part of a SMS. The physiotherapist’s role in delivering SMS was clear. It referred to a linked goal setting, barrier identification, problem solving, goal modification, peer support, action planning and self-regulation with SMS. However, more research is needed into the influence of the physiotherapist in these interventions (Richardson et al. 2014). No studies were found which explored patients’ CS prior to setting a SMS programme that would potentially develop a more targeted SMS.

Miles et al. (2011) and Carnes et al. (2012) demonstrate the diversity of the components of SMS in chronic musculoskeletal pain including LBP. According to Miles et al. (2011), a SMP can be defined by its components which may include education, CBT or other relevant psychological component, and tasks which may be physical or lifestyle factors. Thus, the screening of psychological factors by physiotherapists, such as their CS, might be important in facilitating the SMS. May (2010) and Osborne et al. (2004) demonstrated specific factors which must be understood and addressed for people with CLBP, and these are reported below.

2.3.3.1 Patient-physiotherapist relationship

Encouraging and supporting individuals to manage and take ownership of their illnesses is considered a key step in patient-centred healthcare (National Chronic Disease Strategy (NCDS) 2006). A patient-centred approach should be adopted for patient care (Cooper et al. 2008), as understanding the patient as an individual is a key element in initiating a relationship of trust to achieve person-centred care in physiotherapy (Potter et al. 2003; Morera-Balaguer et al. 2021). Patient-centred care refers to a style of clinician-patient interaction characterised by responding to the patient’s needs and preferences, utilising the patient’s knowledge to actively lead the interaction, and involving shared decision-making (Rogers et al. 2005). The development of a therapeutic relationship is one of the key aspects on which the model of person-centred care is constructed, and a therapeutic relationship is defined as an approach allowing negotiating care and offering choices constructed on a therapeutic relationship in which patients are empowered to play a part in any decision-making concerning their issues (Morera-Balaguer et al. 2021).

Mead and Bower (2000) created a conceptual framework with five dimensions; a biopsychosocial perspective, sharing responsibility and power, the patient as a person, the therapeutic alliance, and the clinician as a person. This model identifies the capacity of the professional to understand that the distinctive needs of each individual are important elements for establishing a good interpersonal relationship (Mead and Bower 2000). The biopsychosocial paradigm considers the person to be at the centre of the treatment where clinicians collect information about the patient's psychological, biological and social situation to obtain a comprehensive picture of each patient (Smith et al. 2013).

Patient-centeredness has been hypothesised as a way of viewing health and illness that impacts on the general well-being of a person and expands their contribution to the consultation through empowerment (May and Mead 1999). Sharing responsibility is when patients are truly involved in managing their condition, being at the centre of design-making about their treatment and ensuring that they are responsible for their illness. This is in relation to a clear understanding by healthcare providers of the patient's capacity and ability to be able to engage in SMS (Lawn et al. 2011). A patient as a person refers to the understanding of patients' interpretations and experiences with respect to their illness (Mead and Bower 2000). For example, LBP may cause significant stress to a professional sportsperson as the pain might signify threats to their career and income. This can be compared to someone who can modify their work to adjust to the pain until it resolves. However, this model has been criticised because it was developed from the literature rather than from clinical practice (Cooper et al. 2008).

The healthcare provider dealing with patients in a friendly manner might increase the possibility of patient adherence to the given treatment, whereas a negative emotional response by either party may cause patients` avoidance of treatment and lack of engagement (May and Mead 1999), which may potentially contribute to the failure of SMS. Josephson et al. (2015) noted that to obtain insights into the therapeutic relationship in physiotherapy, the language of both patients and physiotherapists should be considered, including shared respect and physiotherapists' engagement with patient preferences.

Rogers et al. (2005) proposed a framework to increase patient-centeredness in chronic illnesses that facilitates SMS. This model provides support at three levels, i.e. patient, healthcare professional and organisation/accessing services. The authors further detail that to provide support at the patient’s level, therapists could improve patients` information. For patients with CLBP, this may mean that health professionals, such as physiotherapists, could develop patients` knowledge and information about their pain and the effect of applying SMS through effective communication. Fu et al. (2016) stressed that the existence of effective communication between patients and healthcare providers is essential to forming a partnership that could affect the implementation of SMS. Moffett et al. (2009) further reported that increasing patients` self-efficacy through effective communication is important in a patient-physiotherapist relationship that supports patient-centredness and patients` behavioural change, such as using more active CS, is more likely to occur when a good rapport is established.

For health professionals, the promotion of flexibility in the professional response is needed by placing the patient at the centre of the treatment and by providing time to discuss the SMS plan and change as necessary (Rogers et al. 2005). An effective physiotherapist-patient therapeutic relationship can be developed when physiotherapists spend time with their patients, this involves treatment sessions that often lasts up to 30 minutes per patient and seeing the same patient several times over several treatments (Moffett et al. 2009). Furthermore, patients value recognition of their emotional and physical concerns by healthcare providers. This will lead to an increase in the patient’s ability to live positively with a chronic condition (Rogers et al. 2005). However, at an access level, one way to increase patient-centeredness is to amend access arrangements to healthcare professionals and to utilise patient/professional contacts as a means of influencing the future use of SMS (Rogers et al. 2005).

Several studies have examined the significance of the therapeutic relationship between healthcare professionals and patients within a patient-centred approach (Rogers et al. 2005; Cooper 2008; Kitson et al. 2013; Constand et al. 2014; Sidani and Fox 2014). However, it is important to note that none of these studies specifically address individuals with CLBP in the context of physiotherapy. Only one study, conducted by Cooper et al. (2008) defined patient-centeredness from the patient's perspective in the context of physiotherapy with CLBP. Twenty-five participants with recurrent and non-specific CLBP were included and data were collected through semi-structured interviews. Six themes emerged regarding patient-centeredness from the patients' perspectives, i.e. communication, individual care, decision-making, information sharing with physiotherapists and the organisation.

In terms of communication, CLBP participants expressed a preference for treatments and diagnoses that were well-explained, which has been identified as effective communication by Constand et al. (2014) . For individual care, patients' valued listening, understanding, a good relationship with the patient, and permitting the patient to clarify their issues and to ask the physiotherapist to deliver treatment individually. This dimension relates well to the dimension `patient-as-person' in Mead and Bower (2000). For decision-making, some participants expressed the view that as physiotherapists are the experts, physiotherapists should decide the best treatment, while others preferred a collaborative approach where their needs were assessed, and treatment options were discussed so both patients and physiotherapists select an appropriate treatment. For information sharing, participants preferred to be provided with information about the cause of their pain and how it could be relieved. This is termed the patients` level in the framework by Rogers et al. (2005).

For the physiotherapists' theme, participants valued consulting with a caring, friendly, pleasant and professional physiotherapist who showed an interest in them. Mead and Bower (2000) stated that the possibility of patient adherence to treatment might increase when healthcare providers are friendly, but patients did not necessarily perceive their treatment as being patient-centred (Cooper et al. 2008).The organisational theme highlighted participants` desire for direct and fast access to physiotherapy services and future access for follow-up (Cooper et al. 2008), aligning with the `organisational level' in the framework proposed by Rogers et al. (2005). The study has a few limitations such as the exclusion criteria not being clearly identified, and the participants' recruiting process was based on physiotherapists' self-selection that potentially introducing bias. Additionally, the sample size (n=25) was deemed insufficient by the authors to enable generalisation of the results.

Besley et al. (2010) reviewed sixteen studies within the physiotherapy context to explore and identify the key elements of the therapeutic relationship. The study reported eight key themes: patients' expectations, personalised therapy, partnership, physiotherapists' roles and responsibilities, goal setting, communication, rational aspects and influencing factors. The patients' expectation theme encompassed desires for diagnoses, detailed and explanation of issues and treatments, SMS and symptom relief. Personalised therapy theme means physiotherapists should be culturally responsive, such showing respect for patients regardless of their cultural backgrounds. For example, In Kuwait, some patients might be recommended to practise Yoga by their principal physiotherapists due to its beneficial effects on spine mobility and pain relief. However, there is a common belief that yoga is originally based on the philosophy of Hinduism, several Kuwaiti patients might not accept this advice as it contradicts to Islamic beliefs (AlAbdulwahab et al. 2013). Koenig (2001) advocated that a patient’s spirituality and religiosity might influence the acceptability of some of the given treatment strategies by healthcare providers when they conflict with the patient’s spiritual and religious beliefs.

The partnership theme was indicated as sharing knowledge, trust, mutual respect, power balance, and active involvement and cooperation with the patient. Physiotherapists' roles and responsibilities were identifying and strengthening patients’ resources and advising the patient regarding their abilities to engage in SMS. For goal setting, the goals of therapy needed to be clear and understood by both patients and their physiotherapists. Communication was reported as active listening skills, visual aids and non-verbal behaviours, such as eye contact, facial expression, gestures, posture, and touch. The rational aspect’s theme indicated patients perceived empathy, caring, friendliness, warmth and trust that the physiotherapist believed in them. The influencing factor's theme indicated external factors, such as structure, processes, and the environment, these included waiting time and patients having enough time with their therapist. In addition, the theme reported prerequisites of the physiotherapist, such as their skills and knowledge that could increase patient self-confidence. Moreover, the patient’s characteristics, existing resources, life experiences, and willingness to engage were reported as prerequisites of the patient.

Therapeutic relationship will also be discussed in relation to patients` adherence to treatment in the following section (2.3.3.4 Motivation and patients' adherence to treatment). Several guidelines have been developed in accordance with patients' empowerment, such as those in the UK (Department of Health 2000). However, there is insufficient research which has investigated patients' and physiotherapists' relationship in Arabic countries and Kuwait, as most studies have been conducted in Western society.

2.3.3.2 Self-efficacy

Several studies on CLBP revealed low to moderate evidence that SMS show limited effectiveness and demonstrated minimal improvement in pain and self-management skills compared to usual care (Keogh et al. 2015). Jones and Riazi (2011) also noted uncertainty about the impact of self-management education for people with chronic conditions, often leading to short-term effectiveness. Michie et al. (2009) attributed this to the absence of an underpinning theoretical framework, such as behavioural theories (Bandura 1977). Self-efficacy has been defined as a person's belief about their abilities to apply designated levels of performance that alter their lives (Jones and Riazi 2011), or a personal belief about how successfully one can cope with difficult situations, with the latter referring to the degree of confidence a patient has in performing normal activities and tasks despite their pain (Foster et al. 2010).

The concept of self-efficacy appears to relate to maintaining progress and coping with CLBP and appears to be a key factor for successful SMS for people with CLBP. According to Kawi (2014b), the self-management experience of CLBP patients often involves coping with the variation in pain level intensity. The self-management concept consists of executing behaviour and skills with self-efficacy so that patients are able to decide and to be involved in tasks to manage their chronic illness.

Bandura (1977) noted three aspects which shape behaviour, i.e. situation-outcome expectancies, outcome expectancies and self-efficacy expectancies. The beliefs about how these events are linked and connected is a situation-outcome expectancy. Outcome expectancies are about a person's assumption that a given behaviour will lead to a specific result. For instance, 'if I stop smoking, I will gain weight'. Self-efficacy expectancies refer to how much effort an individual will expend and how long they keep going when they face barriers and unfavourable experiences, e.g. 'I can stop smoking'. Figure 1 represents the difference between efficacy expectations and outcome expectations.

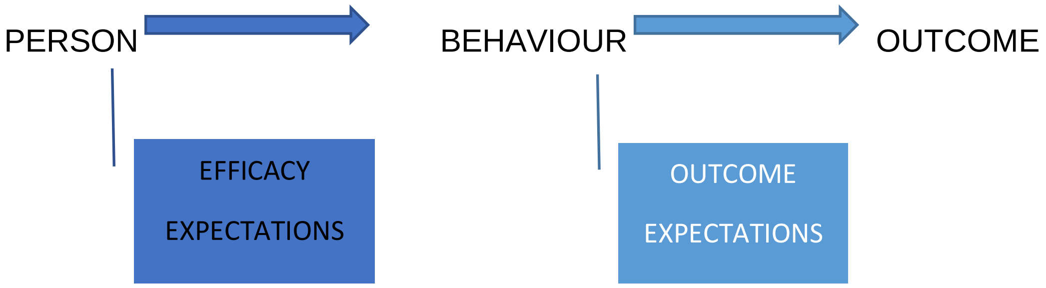


Figure 1. Difference between efficacy expectations and outcome expectations (Bandura 1977).

From a physiotherapist's perspective, behaviour change as a therapy is an important skill that should be learnt and practised, as the promotion of positive lifestyle functions, e.g. physical activity, are linked with lowering the risk of chronic diseases and an improved QOL (Keogh et al. 2015). Bandura (1977) identifies self-efficacy as a crucial determinant of behaviour, and to alter inappropriate behaviour, self-efficacy must be changed. Bandura (1977) suggested four approaches to changing self-efficacy: mastery experiences, modelling, persuasion and giving physiologically compatible experiences.

Mastery experiences involve positive experiences in a skill, task and behaviour (Jones and Riazi 2011). Modelling entails the comparison of others with CLBP completing SMS to boost confidence (Shapero Sabari et al. 2002). Persuasion helps to enhance an individual's confidence about their internal skill level by the use of persuasion and verification from another important person (Jones and Riazi 2011). Physiological response is where the efficacy beliefs are shaped from the feedback formed by an individual's personal physiological state (Jones and Riazi 2011). The theory also reveals that the higher the levels of self-efficacy, the lower the levels of pain and disability (Costa et al. 2011).

Self-efficacy is linked with SMS to improve a person's confidence for positive change (Battersby et al. 2010). It might be important to consider self-efficacy when SMS are being recommended for CLBP. A meta-analysis of a sub-group analysis by Miles et al. (2011) reported that self-efficacy and depression were good predictors of outcome at baseline, and these two factors should be targeted at early stages of LBP to prevent persistent pain and disability. Furthermore, strong evidence was found that physical activity and catastrophic thoughts about pain as mediators could mediate the outcome from SMS and thus these should be targeted by interventions in CLBP.

According to Foster et al. (2010), people with low self-efficacy have a low confidence in relation to self-managing and controlling their own back problem and generally have less good clinical outcomes. Thus, if a patient were to manage CLBP successfully, they would need self-confidence and improved self-efficacy and physiotherapists need to determine patient’s level of self-efficacy to provide a personalised SMS (Foster et al. 2010). In physiotherapy practice, psychological factors have been highlighted as important factors which are able to influence adherence to recommended treatment (Chan et al. 2009). Regrettably, Alexanders et al. (2015) showed in a SR that there is a lack of understanding of psychological factors amongst physiotherapists that would optimise the implementation of psychological theory and associated techniques within their practice. The same data were reported within Kuwait clinical practice (Al-Enezi and May 2017), and were extensively discussed in the CLBP treatment section above. Thus, incorporating self-efficacy within a physiotherapist setting might optimise physiotherapists` perceptions of SMS, which could lead to a better understanding of patient adherence to SMS programmes which, in return, could improve cost-effectiveness.

The optimal SMS programme is built on self-efficacy theory and aims to enhance patients’ confidence to manage their activities of daily living whilst having a chronic disease (Lorig et al. 2003)**.** Findings from several studies highlight the importance of self-efficacy in the treatment of CLBP. For instance, a cross-sectional study by Krein et al. (2007) examined how chronic pain in older people influenced their difficulties with suggested SMS, and the role of self-efficacy on SMS. They showed that self-efficacy played a key facilitating role such that it cancelled or minimised the relationship between chronic pain and difficulties with specific exercises and following SMS. This study therefore recommended that physiotherapists improve patient's self-efficacy to support SMS. The study, however, was conducted for older people, thus limiting the generalisability of the findings.

Ferrari et al. (2019), sought to determine the prevalence of low self-efficacy in people with CLBP, and the relationships between self-efficacy, disability, pain, and the main demographic and clinical characteristics. They retrospectively reviewed 310 patients in multiple centres who were treated with physiotherapy i.e. pre- and post-treatment. This was a robust study using a powered sample size, valid and reliable PROMS, such as pain self-efficacy questionnaire (PSEQ), and stratified patients with a low self-efficacy of <40 out of 60, and a high self-efficacy of ≥40. The results showed that 111 CLBP patients scored <40 and 119 scored ≥40 in PSEQ. Those with low self-efficacy were mostly females and used more medications particularly those with high levels of pain. Similar results were found by Grønning et al. (2016) who reported a significant relationship between low self-efficacy and passive CS in patients with chronic inflammatory polyarthritis.

A longitudinal study by Costa et al. (2011) investigated whether self-efficacy and/or fear of movement mediated the relationship between pain intensity and disability in 184 patients with CLBP. The data showed that at the onset of CLBP (3 months), self-efficacy and fear of movement partially mediated the effects of pain intensity on disability. However, only improvements in self-efficacy partly mediated the relationship between changes in pain and changes in disability over a 12-month period. The study suggested that self-efficacy may be a significant variable which was more influential than FABs regarding understanding the relationship between pain and disability for people with CLBP. Notably, this study recruited patients of a younger age, i.e. ≥14 years, which would be a younger group than most studies on LBP. This needs consideration when extrapolating to other age-groups.

Vieira et al. (2014). investigated the relationship between self-efficacy and FABs in CLBP patients in Brazil, evaluating the prevalence of self-efficacy and FABs, the relationship between these beliefs and their correlations with socioeconomic factors, depression, disability and fatigue. Two hundred and fifteen patients completed 5 valid and reliable PROMS, measuring kinesiophobia, depression, fatigue, disability and self-efficacy. The study showed that low self-efficacy was correlated with the level of disability. These were similar findings to a prospective study by Ahmed et al. (2019), who found that LBP patients with lower self-efficacy were associated with greater functional disability. Vieira et al. (2014) showed that low self-efficacy was also associated with lower income, fatigue and depression ($p<0.001$). Although female participants represented the majority, high FABs was found more in male subjects, and associated with lower income, level of disability and depression (p<0.001). It appears that as the level of disability increased this was linked to reduced self-efficacy and increased in FABs (p<0.001); and this indicated that such beliefs need to be targeted during treatment.

2.3.3.3 Depression and anxiety

Depression is increasing worldwide, and is regarded as being responsible for high levels of disability (WHO 2017). People with pain and comorbid depression experience more pain, with pain being sustained longer and at a higher intensity and can contribute to persistent pain (Bair et al. 2003). CLBP patients are at a three-fold risk of experiencing depression than individuals in the general population (Larson et al. 2004), however the association between persistent LBP and depression could be reversible (Bair et al. 2003).

Pinheiro et al. (2015), in a SR demonstrated that people with depression are at a higher risk of having a future episode of LBP, with the risk being higher in those individuals with more severe levels of depression. Thus, the direct health costs are higher for those with LBP who are depressed (Baumeister et al. 2012). It has been suggested that psychosocial factors can play a key role in the progression of disabling persistent LBP (Truchon 2009). The early recognition of psychosocial factors, such as depression, are key and if not considered, could impact on an individual`s recovery and contribute to poor outcomes (Sullivan et al. 2008).

Depression has been investigated in several studies which aimed to explore the relationship between psychological factors and LBP. The results were inconsistent regarding the effect of depression on the course of LBP. For example, some studies found that depression was associated with an increased risk of developing LBP (Larson et al. 2004; Currie and Wang 2005; Makris et al. 2014; Pinheiro et al. 2015) whereas other studies did not (Mitchell et al. 2010; George et al. 2012; Matsudaira et al. 2012). Other studies investigated the role of psychological variables in LBP (Linton 2000; Pincus et al. 2002; Ramond et al. 2011) and depression appears to be a predictor of poor outcomes, including disability and work absenteeism. However, it is important to note that the SR by Ramond et al. (2011) only included quantitative studies. The author believes that reviewing patient beliefs using qualitatative methods would be useful. The study fulfilled most of the PRISMA checklist, thus enhancing the robustness of the review. However, Linton (2000) achieved fewer PRISMA checklist items and is now over 20 years old which may affect the current relevance of the data.

Several studies have examined the association between depression and pain. A cross-sectional study by Tsuji et al. (2016) examined the influence of depression on health related QOL in CLBP and the relationship between depression, work impairment and healthcare use amongst CLBP patients. Data were collected from a general health survey that was designed to indicate the health of the population in Japan. This involved using valid and reliable PROMS to assess pain, depression, QOL, mental and physical status and work productivity. This survey was distributed to 30,000 people of whom 425 had CLBP. These were stratified into people with CLBP and depression (n=70), and those with CLBP only (n=355). The study revealed that depressed CLBP patients had significantly more severe and higher levels of pain, poorer QOL and lower labour productivity compared with CLBP patients without depression. Depressed patients were also found to request increased healthcare visits compared to non-depressed patients. A limitation was that the study design failed to allow for the assessment of causality between pain and depression. In conclusion this study reinforced the concept of implementing screening for depression in CLBP patients (Sullivan et at. 2008).

Further studies recommended early screening for patients with CLBP, as this could facilitate more tailored treatments for patients with CLBP (Haggman et al. 2004; Jackson et al. 2006; Chan et al. 2009; Oliveira et al. 2019). In a prospective multicentre cohort study, Oliveira et al. (2019) explored the influence of anxiety and depressive symptoms, and their interaction with clinical outcomes for 284 CLBP patients. The majority of CLBP patients were found to have anxiety and depression which was associated with changes in both pain and disability at one-year of follow-up. Research on the impacts of depression on people with LBP and how it affects the SMS programme is limited to one study by Damush et al. (2008), who evaluated clinical depression on pain and self-management practices by using a cross-sectional analysis of the baseline data for 500 participants, i.e. 250 with chronic neck, shoulder, lower back or hip issues and comorbid depression, and 250 with pain only. CLBP represented the largest percentage amongst the two groups. The study used valid and reliable PROMS for pain and depression, and open-ended questions gathered data on SMS, which is an appropriate method provided appropriate detail was reported. The study revealed that patients with depression exercised less per week as SMS in comparison with non-depressed patients and showed a greater use of cognitive strategies. The study suggested that it might be beneficial to understand the differences between the preferred CS of the depressed versus the non-depressed patients when tailoring SMS programmes.

Anxiety is also associated with LBP and the relationship between anxiety and chronic pain is similar to that between depression and LBP, being described as bidirectional (Adams and Turk 2018). This association has been explained by Molde Hagen et al. (2006), Kroenke et al. (2011), Knaster et al. (2012) and Lerman et al. (2015) as a situation where anxiety enhances pain perceptions, reduces pain tolerance, and chronic pain contributes to continued levels of anxiety amongst individuals with anxiety disorders.

Obstacles to SMS can occur as with any treatments, thus, SMS would have limited effectiveness if anxiety and depression were not addressed (Lerman et al. 2015). Additionally, enhancing self-efficacy would be beneficial for people with CLBP (May 2010). The adoption of self-management practices and skills amongst patients with pain may be difficult in the presence of depression which is estimated to exist in approximately 30– 50% of chronic pain patients (Kroenke 2003; Bair et al. 2003; Sullivan et al. 2008). More precisely, depressed patients seeking primary care frequently reported CLBP (Trivedi 2004), and their ability to self-managing their pain could be hindered by depression, which decreases self-efficacy through the reduced outcome expectations of self-managing effort and increased fatigue (Damush et al. 2008). Thus, understanding that depression and anxiety are increased in people with CLBP should encourage physiotherapists to take these issues into account during the management of CLBP. Their neglect may lead to poor adherence to treatment and ultimately an unsuccessful SMS programme.

2.3.3.4 Motivation and adherence to exercises

It is proposed that health professionals often contribute to the failure of patients to successfully perform recommended SMS due to a lack of knowledge of how to appropriately motivate people with chronic pain (Krein et al. 2007). Several changes are expected in patients to self-manage their pain, even though some may perceive SMS for chronic pain as a complicated concept. These changes have been reported by Jensen et al. (2003), and include being active and exercising, and enhancing motivation to induce behavioural change (Jensen et al. 2003). This may illustrate why some individuals differ in their commitment to change and motivation for treatment. Poorly motivated patients might deny, decline or drop out of treatment owing to a lack of enthusiasm, leading to disengagement from the process of SMS (Jensen et al. 2003).

Bandura (1989) social cognitive theory suggested that people's self-efficacy beliefs are influential on patients` level of motivation when faced with obstacles. For instance, Bandura (1989) illustrated that patients with high self-confidence apply greater efforts to overcome obstacles compared to those with self-doubt. Patients could be motivated more effectively when they have a higher health locus of control, are supervised by physiotherapists in an exercise programme, and participate in a behavioural change programme. Consequently, enhancing patients` motivation could increase patients` self-confidence which, in turn, increases patients' adherence to SMS (Beinart et al. 2013). In a qualitative study by Slade et al. (2009) of 18 patients with CLBP (12 females) who had participated in exercise programmes, all participants emphasised the importance of physiotherapists' motivational role and their family support, such as understanding their back pain helped them to adhere to HTE. Beinart et al. (2013) estimated that between 50 to 70% of CLBP patients are non-adherent to prescribed HTE**,** which probably leads to dissatisfaction for both clinicians and patients (Krein et al. 2007). According to Jimmy and Jose (2011) adherence has been defined as the degree to which an individual's actions align with the recommended guidelines provided by a healthcare professional.

Liddle et al. (2009) explored adherence to SMS of 14 females and 4 males with CLBP. Patients appeared to need personalised advice and exercise programmes, to be supervised and supported with follow-up, and to receive education about the physical and emotional impact of CLBP from physiotherapists to improve treatment effectiveness. Although the study fulfilled most of the CASP criteria, the higher proportion of females than males may pose challenges for generalising the data. Furthermore, even though the study aim was to include students and staff, most of the recruited participants were staff of the University of Ulster, thus not achieving their aim.

However, poor adherence to treatment is noted across several physiotherapy settings (Campbell et al. 2001), and was linked to a low physical activity level at baseline, less compliance to exercise, high anxiety, low self-efficacy, depression, seeking help, lack of social support or activity, and increased pain intensity during exercise (Jack et al. 2010). Beinart et al. (2013) aimed to discover adherence to healthcare practitioner advice regarding home exercise in adults with CLBP and reported that lack of adherence to SMS was linked to poor therapeutic outcomes. Thus, patients might stop self-managing when the treatment did not satisfy them. The study robustness was reported using the PRISMA guidelines. However, the lack of standardised measures of adherence to HTE would affect the overall study results.

Escolar-Reina et al. (2009) explored physiotherapist's educational role in increasing patients` adherence to SMS, in 8 primary healthcare centres in Spain. They assessed the influence of the information provided during physiotherapy on patients' adherence to SMS relative to other predictors of adherence, i.e. patient and pain characteristics, and use of SMS before the intervention, and to classify the adherence rates to SMS education during physiotherapy treatment in healthcare centres. A powered sample size of 184 participants were recruited and measures taken at baseline and at 1 month following physiotherapy intervention using structured interviews on pain characteristics and the use of SMS when in pain. The data indicated that CLBP patients used less medications to self-manage their pain when they received clear information about the importance of the SMS and when they received education about their illness during clinical visits. However, limitations were a high loss to follow-up (n=66) and those lost to follow-up might have exhibited different results thus undermining the validity of the data. Furthermore, the authors acknowledged that it was not clear if the optimal scale for measuring adherence level was applied, due to the lack of standardised measures of adherence to prescribed HTE (Beinart 2013). The self-determination theory suggested that adherence is closely tied to relatedness, competence and autonomy (Blanchard 2015). It would be worth considering the use of these to measure adherence by asking simple open-ended questions. Of concern was that participants' informed consent was not noted and at one-month patient follow-up is considered too short to assess the usefulness of SMS because it is a long-term process.

In the Gulf countries and specifically in Kuwait, data concerning adherence to SMS are scarce. There are several non-Kuwaiti healthcare workers in Kuwait, for whom Arabic is their second language. This might also lead to failure to initiate a partnership through difficulties in communication and could lead to non-adherence to SMS. One retrospective review from a clinical audit trial study from KSA by Al-eisa (2010) measured females' adherence to physiotherapy sessions. There was a high level of non-attendance (60%) amongst Saudi females with LBP and the failure to attend two consecutive sessions was defined as non-adherence and non-adherence was associated with younger females. Those who reported improvement were more likely to drop out from physiotherapy sessions. Furthermore, the longer the time delay between patients` referral and the first physiotherapy session, the greater the possibility of non-adherence. However, the study has two main limitations, e.g. included only female population make it difficult to generalise the data, and the fact that the methodological design did not permit the participants to express their reasons for non-adherence to the physiotherapy sessions.

Treatment adherence may be also linked to the degree to which patients' expectations are met and are satisfied with their treatment. Studies on pain highlighted the significance of patients' expectation of recovery from LBP, as greater pre-treatment expectations were more predictive of improved disability and general health outcomes than those with lower expectations (Kapoor et al. 2006; Linde et al. 2007; Myers et al. 2007; Eisenberg et al. 2007). Patients` satisfaction with their healthcare provider enhanced patient compliance and collaboration with treatment, and thus enhanced treatment effectiveness (Verbeek et al. 2004). Patient satisfaction with healthcare providers, including physiotherapists, can be defined as the patient`s positive feeling about treatment or the outcome of healthcare (Verbeek et al. 2004). However, studies in this field were limited to people with general chronic pain (Rogers et al. 2004). Only the studies by Foster and Dellito (2011) and Grimmer et al. (1999) explored LBP patients' satisfaction with the physiotherapy field.

A SR by Verbeek et al. (2004) explored LBP patients` expectations and satisfaction with treatment as part of practice guideline development. The findings from the qualitative studies showed that patients need an explicit diagnosis of the cause of their pain, specific information and advice, a physical examination and pain relief. Patients expected that there would be further diagnostic tests, other treatment techniques, referrals to specialists and sickness certification. They also anticipated that the healthcare provider will confirm that their pain exists and is real. Moreover, they need a confidence-based association that involves respect, listening, understanding and to be involved in the decision-making process. Although the study showed only what patients need and expect from their visit to the healthcare provider, it is clear that good communication and explanation about the nature of LBP is essential to support the development of a realistic patient expectation towards the efficacy of the treatment which, in turn, may lead to successful SMS. The methodological quality was high for most of the qualitative studies included within the review, but the healthcare providers within these qualitative studies had recruited their own patients, which might bias the data.

2.3.3.5 Coping with pain

The ability of individuals to control their pain and emotions is an important concept in relation to LBP and has been described as the belief that individuals can influence aspects of their pain, including its intensity (Main and Waddell 2004). Pain control reflects individuals' confidence that they can influence their pain and its impact on their daily life (Main and Waddell 2004) and encompasses both active and passive CS (Bussing et al. 2010), which are highly linked to self-efficacy (Gatchel et al. 2007). Some people with CLBP seem to be able to adapt well to their symptoms and sustain a relatively normal functioning level, however for others, their level of function is compromised (Woby et al. 2004). Keefe et al. (1990) suggest that CS significantly influence healthcare professionals` perceptions of patients` psychological distress and pain reporting. CS appear to be vital characteristics in clarifying psychological distress, and explaining pain and thus, attention has been directed towards the different coping styles that patients exhibit (Harland and Georgieff 2003) and may be a key factor in determining the patients` ability to self-manage their CLBP.

According to Rosensteil and Keffe (1983), CS can be best defined as the technique made by individuals who experience pain to minimise or to reduce their pain. Determining specific CS that patients use could provide more information about the relationship between CS and pain severity and might be useful in guiding treatment in patients with CLBP. For example, Jensen and Karoly (1991) observed the interaction between pain severity level and active CS, such as coping self-statements and ignoring pain sensation strategies. These active CS were more used by patients when they experienced lower pain intensity, which suggested that the severity of pain may influence the CS that the patients adopted. However, no evidence of an association was found between pain severity and active CS. The meanings of active and passive CS might vary in different contexts because of cultural differences in coping with pain (Jordan et al. 1998; Connor-Smith et al. 2007) and classifying CS into active and passive approaches is considered useful to guide treatment approaches (Carroll et al. 2002).

Active CS is when patients do not rely on outside sources, such as healthcare professionals, to manage their condition (Snow-Turek et al. 1996), diverting attention away from pain, reinterpreting pain sensations, employing higher coping self-statements and increase activity levels (Brown and Nicassio 1987; Nicholas et al. 1992). Using active CS has been seen as an adaptive approach whereby patients concentrate their attention on the control of emotional response that might be provoked by the stressor, e.g. anxiety and depression, and they pay no attention to pain and maintain activities, despite the pain (Jensen et al. 1991; Bussing et al. 2010). These strategies often lead to reduced pain levels, and improved functional impairment, with higher general self-efficacy (Kraaimaat and Evers 2003; Bussing et al. 2010). Thus, active CS refers to techniques where patients have to be fully responsible to manage their pain and despite the pain, make an effort to regulate pain and function (Mercado et al. 2000).

In contrast, passive CS involves an outside source which takes responsibility from patients as a pain management strategy (Mercado et al. 2000). These include when people depend on medication (Mitchell et al. 2009; Buchbinder et al. 2018; Dawson et al. 2011), withdrawal and resting (Kraaimaat and Evers 2003) demonstrate catastrophising behaviour (Turner and Clancy 1986; Brown and Nicassio 1987; Nicholas et al. 1992; McCracken and Eccleston 2003; Vuuren et al. 2006; Hulst et al. 2010), which may lead to delayed recovery (Wertli et al. 2014). Passive CS were found to lead to more significant pain and depression (Jensen et al. 1991). For instance, Rosenberg et al. (1987) found that clinically depressed people used substantially less active CS and considerably more avoidance behaviours. Further passive CS have been reported as praying and helplessness (Koleck et al. 2006), restricting social activities, focusing on pain (Mitchell et al. 2009; Dawson et al.

2011), and anxiety and depression. These may result from the inability of patients to control emotions and to regulate stressors (Cabak et al. 2015).

The conceptualisation of catastrophising as a CS is a subject of heated debate within the literature. Low scores in catastrophising scales within the Pain Coping Strategies Questionnaire (PCSQ) were found to be significantly associated with a reduction in pain intensity and in physical and psychosocial impairment (Turner and Clancy 1986). Jensen et al. (1991) and Keefe et al. (1999) argue that catastrophising could not be a CS or a goal focus and therefore should be deemed to be a factor which is different from CS. Several studies supported this view and have shown that catastrophising was not often correlated with other forms of coping subscales (Thorn et al. 1999). For example, catastrophising was seen to overlap with a negative mood, such as anxiety, anger and depression (Hirsh et al. 2007), and has been classified as a pain-related belief rather than a CS (Jensen et al. 1991; Woby et al. 2005). A factor analysis study of PCSQ subscales for patients with chronic musculoskeletal pain found that none of the subscales were loaded with respect to the same factor as catastrophising, which suggested that scales from CS appeared as distinct, independent factors to the catastrophising subscale (Lawson et al. 1990). Jensen and Karoly (1991) further argued that a catastrophising subscale measures patients` worrying thoughts and negative thinking in response to pain, but not as a CS which manages the stress associated with pain.

However, Brown and Nicassio (1987), and Vuuren et al. (2006) identified catastrophising as a passive CS. Brown and Nicassio (1987) and Sullivan et al (2001) illustrated that catastrophic behaviour is a reflection of pain which is described in relation to reliance on others or helplessness. Sullivan et al. (2000) proposed that catastrophising might account for a wider dimension of a societal or interpersonal approach to coping. Within this context, the authors presumed that people vary in the extent to which they employ social or relational goals in their efforts to cope with stress. Therefore, catastrophising patients may exaggerate their pain expression to enhance closeness or to seek help or empathetic responses from others in their social environment. Regrettably, in achieving these social aims, catastrophisers may unconsciously intensify their experience of pain. However, it is important to note that this was a suggestion rather than a proven phenomenon.

There are several studies that examined the impact of active and passive CS and on patients' level of pain and disability, and whether the way the patients cope could affect the persistence of the pain. A prospective study conducted by Jones et al. (2006) examined the prognostic value of active and passive CS in people with CLBP (n=974) and their relationship to pain levels, disability and persistent pain. At baseline, valid and reliable PROMS were used, and patients had a GP consultation, and were followed-up at three months. The questionnaires measured pain intensity (visual analogue scale (VAS), disability (RMDQ) and CS (Vanderbilt Pain Management Inventory Questionnaire (VPMIQ). Active and passive CS were adopted in the study from the VPMIQ. Active CS were defined from VPIMQ as when the subjects were being active, using pain distraction techniques, and engaging in physical activity or physiotherapy. In contrast, passive CS were noted when the patients were talking to themselves and wishing that their doctor would prescribe stronger painkillers, when they were relying on others for help with daily tasks, and when they were thinking that they could not do anything to reduce their pain. The study showed that the risk of having persistent disabling LBP increased three-fold in participants who reported high levels of passive CS. However, active CS was not associated with an increase or decrease in the risk of evolving a new episode of LBP.

Similarly, data from Carroll et al. (2002) revealed that high levels of adopting passive CS are strongly associated with disabling pain and that there is no evidence of an association between pain severity and active CS. The study recommended that early identification of these subgroups, i.e. passive and active CS, might help target future therapies for those people at higher risk of a poor outcome. Dawson et al. (2011) revealed similar data to Jones et al. (2006) that participating in exercises or physiotherapy did not predict LBP-related sick leave. However, the three previous studies (Jones et al. 2006; Carroll et al. 2002; Dawson et al. 2011) utilised the VPMIQ, which has been validated to explore active and passive CS for people with arthritis only, and not for people with LBP (Brown and Nicassio 1987; Kraaimaat and Evers 2003). Thus, the results cannot be generalised to all patients with LBP.

Catastrophising as a passive CS and its relation to alteration in lumbar muscle activity during walking was studied by Hulst et al. (2010) in a cross-sectional study of 63 CLBP patients. They found that catastrophising leads to increased lumbar muscle activity that could elicit pain and was related to persistent pain in CLBP, and an active CS, e.g. distraction from pain, leads to increased lumbar muscle relaxation during walking. The study used valid and reliable PROMS for pain (VAS), a Dutch version of CS, and the RMDQ and met all the chicklist criteria from the (Munn et al. 2014). However, the small sample size was a key limitation for the study and was acknowleged by the author, thus, the data were subject to type II errors. Failing to refute the false null hypothesis is termed as a type II error owing to the fact that the study lacks the statistical power to identify adequate evidence for the alternative hypothesis (Schmidt et al. 2018).

A prospective longitudinal observational study conducted by Mercado et al. (2005) reported that passive CS was a strong and independent risk factor for disabling LBP and those who adopted moderate to high levels of passive CS were at five-times the risk of having disabling pain, whilst those using active CS were not. This was similar to the data from Jones et al. (2006), who reported that the risk of having persistent LBP was about three-fold higher with passive CS. Mercado et al. (2005) showed strengths in their study, such as reporting the control of any possible confounders, and used reliable and validated outcome measures, such as VIPMQ for CS and the chronic pain questionnaire for pain. However, the VIPMQ, as noted, is mainly used for arthritis pain (Brown and Nicassio 1987), which may undermine the validity data reported unless they all had LBP pain that was related to arthritis.

A prospective study by Carroll et al. (2002) explored the sociodemographic, pain-related and health-related factors associated with different possible combinations of active and passive CS in 644 individuals with either chronic neck or CLBP. The study showed similar findings to Mercado et al. (2005) and Jones et al. (2006), that disabling pain was highly correlated with passive CS, whereas active CS was not. However, the study also used the Vanderbilt PROMS that is mainly used in people with arthritis pain. Thus, the generalisability of the data might be limited. In addition, there was a high non-response rate of 45%, and this may jeopardise the validity of the data (Winter et al. 2005).

Praying, and hopelessness or helplessness, as a CS, were studied by Koleck et al. (2006) in a prospective cohort study and these aspects were predictors of functional disability and emotional distress, respectively, one year following an initial episode of

LBP. Participants who scored highly in praying and the distraction scale in the PCSQ, suggested that they were coping by avoiding thinking of pain and trying to focus their attention on other things when they pray. They perhaps were seeing that the course of pain was a destiny and/or God’s will. This study suggested that adopting a praying strategy perhaps might be seen as an adaptive strategy in the acute phase, and yet it appears from the study`s findings to play a dysfunctional role in LBP adjustment. The study recruited 99 subjects who were evaluated after an acute episode of LBP and at one year follow-up, and were classified into two groups, i.e. improvement and chronic. Several valid and reliable PROMS assessed patients’ psychological function, anxiety, depression, QOL, locus of control, social support, pain CS and VAS. The method was reproducible, however, the need to adjust any possible confounding factors, such as the high rate of having work-related injury that was found only in the chronic group, may make it unclear whether the persistent pain was due to the group which was adopting passive CS or due to a work-related injury. The study recommended that CBT might be an effective treatment for CLBP patients who used passive CS.

A prospective study by Woby et al. (2005) reported that significant use of distraction, and praying or hoping strategies were prognostic factors that lead to more pain and disability in people with CLBP. Ninety participants completed valid and reliable PROMS; PCSQ, RMDQ and VAS prior to a CBT programme provided by physiotherapists. The study revealed a relationship between CS adopted in patients with CLBP, and levels of pain and disability, which existed due to the influence of catastrophic thinking and patient’s perceptions of their ability to control and to decrease pain. Thus, the study recommended that a rehabilitation aim for CLBP patients should be to bring about changes in catastrophic thinking, patient’s perceptions of their ability to control and to decrease pain and to reduce patients' utilisation of passive CS, such as praying and hoping and distraction. The study, however, included only patients with moderate levels of pain and disability, and so the findings cannot be generalised to patients with mild or severe pain levels. The study further excluded behavioural CS subscales from the process of analysing the predictor roles of distraction and the praying or hoping subscale. Thus, not knowing the behavioural strategies could undermine the robustness of the reported data and lead to bias. For example, the patients might not use behavioural activities, such as exercises, and that might be the main reason for predicting pain and disability rather than distraction and praying or hoping. The study did not specifically mention exactly when patients completed the PROMS, nor reported when they followed up the patient’s post-treatment to enable them to draw the conclusion that distraction, praying or hoping leads to more pain and disability. In addition, they did not report participants’ withdrawal or loss to follow-up and whether the loss to follow-up number could affect the results.

In contrast Spinhoven and Linssen (1991), used clear data collection time points, i.e. pre-treatment and 6 months follow-up, and reported study dropouts. The study examined whether a group programme for LBP patients (n=43) including education about pain, relaxation training and imaginative strategies to cope with pain, produced changes when compared to a baseline period of CS utilisation. The second aim was to study whether changes in PCSQ scores are linked to therapeutic improvement at post-therapy and 6-months. Thirdly to examine if utilising CS at pre-treatment were predictive of therapeutic improvement at post-treatment and 6-months. The treatment (education about pain, relaxation training and imaginative strategies to cope with pain), was successful in increasing all patients scores for perceived ability to control pain post-treatment, however this was not detected at the 6-month follow-up. The helplessness strategy (catastrophising) was not reduced in patients’ post-treatment, but was reduced significantly at 6 months, which might mean that the education process needs a long time to see the effect. Furthermore, participants with high helplessness scores at pre-treatment reported a higher level of psychopathology post-treatment, whereas those who scored low in helplessness reported less depression and psychopathology post-treatment. The study used two valid and reliable questionnaires, i.e. the Dutch adaption of the PCSQ and the Dutch version of the symptom Checklist-90 (SCL-90) for depression. However, this study shows several limitations as the adopted design was not clearly stated, and whether or not patients’ informed consent and ethical approval were obtained were not noted. In addition, little information about the participants was provided at baseline, and the mode of questionnaire delivery was not reported, thus reducing reproducibility. The study included diverse diagnoses of CLBP, and including those who had had back surgery, which increases generalisability.

A correlational study by McCracken and Eccleston (2003), compared the acceptance and coping with chronic pain in predicting the adjustment to chronic pain by measuring anxiety and depression levels, and pain-related disability. Participants had CLBP (n=230) and were seeking treatment from a university pain management centre. The results showed that patients with a high acceptance of chronic pain had less pain, disability, pain-related anxiety, depression, and higher daily uptime and work status. Nevertheless, scoring high in diverting attention and praying or hoping was found to be associated with more significant pain, disability, pain-related anxiety, depression and being less active, and a poorer work status. This concurs with the findings from a prospective study by Woby et al. (2005), who reported that praying and hoping lead to more pain and disability in people with CLBP. Coping variables were rather weakly related to the acceptance of pain and relatively unreliably associated with pain adjustment variables. Even though the study discussed patients' details explicitly and used valid and reliable PROMS, it had notable limitations including the absence of reporting or adjustment for confounding factors, and the inability of the design to infer causal relationships (Bornstein 2018).

However, contradictory findings were reported by Turner and Clancy (1986), who revealed that both cognitive behavioural and operant behavioural treatment changed the way patients cope with their pain, and that increased use of praying and hoping strategies following treatment were significantly associated with reductions in reported pain intensity for people with persistent CLBP. The robustness of this study was that it used valid and reliable PROMS, i.e. PCSQ, the Beck Depression Inventory, and the sickness impact profile, and there was no dropout of subjects. However, limitations included the utilisation of a non-validated pain diary, i.e. verbally reported pain intensity and combining praying/hoping with diverting attention scales might have skewed the study results. In addition, a transparent randomisation process was not reported, and therapists, assessors and patients were not blinded to the treatments, which might bias the results. The included males and females had to be married or cohabiting to be included, which makes the results difficult to be generalised to single people.

2.4 Summary for coping and self-management strategies

The CS employed by an individual with CLBP appear to be one of the factors that partly influences how well they adjust to their symptoms and respond to treatment, and knowledge of an individual`s CS might be useful to physiotherapists when delivering SMS programmes. The Physiotherapists’ role is vital to educate patients about the nature of the pain and consequences of adopting passive CS. However, the literature around CS and LBP within the physiotherapists is limited to five prospective studies (Carroll et al. 2002; Mercado et al. 2005; Woby et al. 2005; Jones et al. 2006; Koleck et al. 2006), two interventional studies (Turner and Clancy 1986; Spinhoven and Linssen 1991), one predictor study (McCracken and Eccleston 2003) and one SR (Ramond et al. 2011). People with CLBP who adopt passive CS are found to be associated with higher pain and disability, and higher psychopathology post-treatment, which are predictive of functional disability and emotional distress, respectively, and increased lumbar muscle activity. Behavioural change treatment has been proposed to change the way the patients with CLBP could cope (Turner and Clancy 1986).

SMS should not be fewer than two components, and could include education, changing behaviours, and physical or lifestyle factors, to be delivered appropriately to the patients. The best SMS appear to be based on CBT in addition to self-efficacy, partnership, and support. Two studies reported home exercises as the most common form of SMS, and two reported the use of medications. The number of studies on SMS and CLBP are scarce, i.e. two SRs (Carnes et al. 2012; Du et al. 2017), three qualitative studies (May 2007; Cooper et al. 2009; Crowe et al. 2010), one RCT (Haas et al. 2005), and one cross-sectional study (Kawi 2014a).

2.5 Research gap

It appears within a limited literature base that there is a lack of differentiation of SMS in Western culture for people who cope well and those who do not cope well with their back symptoms. Most of the literature focuses on examining a few active or passive or both CS quantitively using only one PROM, leaving many contributing factors to CS unexplored. Additionally, no study has been conducted in a country with in Arabic Islamic culture, such as Kuwait, investigating how CS could influence patients’ SMS in the physiotherapy context. Furthermore, the views of physiotherapists in a country of Arabic Islamic culture have not been investigated to understand their perceptions toward patients’ CS and SMS following discharge, and the rationale behind the choices of SMS delivered to patients with CLBP.

Understanding how different patients cope with their pain in their management of CLBP and exploring the nature and extent of SMS for chronic pain is crucial (Blyth et al. 2005). It could be vital for physiotherapists to determine which SMS to apply to which people to best influence adherence, given that studies about adherence to effective SMS in healthcare and determinants of adherence are scarce (Escolar-Reina et al. 2009). Thus, exploring physiotherapists’ opinions and patients’ experiences might lead to a better understanding of CS and SMS for people with CLBP in Kuwait.

Therefore, the main two aims of the study within the cultural context of Kuwait are: (i) to explore patients` CS and their perceptions of SMS, and (ii) to explore physiotherapists’ perceptions of the patients` CS and SMS at discharge following physiotherapy.

The secondary two aims are :(i) to observe the patients changes in terms of the PROMS between pre- and post-physiotherapy treatments, and (ii) to use patients and physiotherapists qualitative data to provide provisional data to support the proposal of a system to categorise patients into those who mainly adopt active CS (PAS) and those who mainly adopt passive CS (PPS).

The research questions are:

- Do patients with CLBP in Kuwait have different coping strategies?
- If different coping strategies exist, to what extent does this make a difference and influence self-management strategies?
- Does physiotherapy treatment change the outcomes of patients with CLBP, i.e. in terms of pain, anxiety and depression, self-efficacy and the way they cope with pain?
- Do physiotherapists in Kuwait consider early screening for coping responses during patient assessments?
- If they do so, do physiotherapists tailor self-management programmes for PAS and PPS?

Chapter 3: Methodology

3.1 Overview

This chapter will present the methodological approach for this research study including reflections on the research paradigm and philosophical underpinnings.

3.2 Research philosophy

Creswell (2006) defined a research paradigm as the philosophical beliefs undertaken by the researcher that offer a fundamental set of assumptions that leads to action. Similarly, Denzin and Lincoln (1994) described a paradigm as a network that encompasses the epistemological, ontological and methodological assumptions of the researcher. An understanding of these concepts is necessary to explore my impact on the chosen methodology and methods to address the research question.

3.2.1 Ontology, epistemology, methodology and methods

According to Teddlie and Tashakkori (2009), the research paradigm is the worldview or the framework that consists of four elements, i.e. ontology, epistemology, methodology and methods. Ontology is the ‘study of existence’, ‘the nature of reality’, or ‘how things really work’ (Lincoln and Guba 1985), and could be briefly explained as concerning the nature of the phenomena to be examined. Different ontologies make various assumptions (Bahari 2012). Epistemology refers to the formation of knowledge built from the research process and concentrates on how we understand phenomena (Neuman 2014). Epistemology also refers to the nature of knowledge and what represents appropriate knowledge in the research area (Saunders et al. 2007). Methodology refers to a well-organised approach to producing that knowledge for understanding (Taylor and Medina 2011), whilst methods relate to the instruments utilised to enact ontological, epistemological and methodological beliefs (Slevitch 2011).

The quantitative (postpositivist) and qualitative (constructivist) approaches have opposing positions in relation to the role of the theory in research (deductive, inductive), opposing ontology (objectivism, subjectivism/constructivism) and epistemology (positivism, interpretivism) (Tashakkori and Teddlie 1998; Cameron 2009). This raises the argument that mixed method approaches are incompatible in a single research study. There has been much debate in the literature from purist researchers who refute the notion that qualitative and quantitative methods can be combined in a research study owing to the substantial differences between the two paradigmatic assumptions (Denzin 2010; Glogowska 2011). Nevertheless, pragmatist researchers believe that combining quantitative and qualitative methods allows the approaches to complement each other and facilitates a diversity of findings which leads to a more complete picture (Mcevoy and Richards 2006; Denzin 2010; Denscombe 2015). Pragmatism has recently been considered a justified and acceptable approach with which to apply mixed methods in health and social care research (Morgan 2007; Östlund et al. 2011). The rationale for selecting this approach will be discussed in Section 3.4.

3.2.2 Worldviews

A paradigm could be considered as a coordinating structure and a deep philosophical position concerning social phenomena and social constructs (Feilzer 2010). In research science, postpositivism, constructivism, transformative and pragmatism are the most well-known research worldviews (Teddlie and Tashakkori 2009). Postpositivism is usually linked with quantitative research, using experimental methods, including treatment, control groups and the application of pre- and post-tests to assess and to gain objective scores of cause-and-effect relationships (Taylor and Medina 2011). Constructivism, however, is associated with qualitative research, and concentrates on observations and behaviours, as well as exploration of issues (Creswell 2009). This makes neither postpositivism nor constructivism frameworks compatible with mixed methods. Conversely, transformative and pragmatism worldviews are considered suitable for mixed methods research (Creswell and Creswell 2018). The transformative-emancipatory framework is widely applied when researchers explore social inequities, such as discrimination, oppression, and marginalisation in healthcare (Velasco and Reed 2023). This is particularly relevant when studying individuals identifying as experiencing homelessness, survivors of torture, and refugees as examples (Sweetman et al. 2010; Craig et al. 2020). Although as discussed in the literature review, people with CLBP in Kuwait might feel marginalised by healthcare providers and, to some extent, their families, this study does not specifically delve into social inequities. Therefore, the transformative-emancipatory framework was not considered the most appropriate worldview for this study.

According to Johnson et al. (2007), pragmatism frameworks provide an epistemological rationale by combining different approaches and notions from quantitative and qualitative methods that facilitate good structure, and address and offer provisional answers to the research question in mixed methods studies. Thus, pragmatism was considered an appropriate philosophical underpinning for this mixed-method research project, highlighting the research problem and clearly focusing on the research question (Tashakkori and Teddlie 1998; Feilzer 2010). According to Creswell and Creswell (2018), the pragmatist worldview has been utilised extensively by mixed methods researchers, stemming from a concern with actions, circumstances and consequences of the research. Thus, pragmatist research is pluralistic, i.e. the researcher explores theory and delivers many views of the theory, gathering data to fulfil the research question and real-world practice (Creswell and Creswell 2018). A pragmatist's worldview is illustrated in Figure 2.

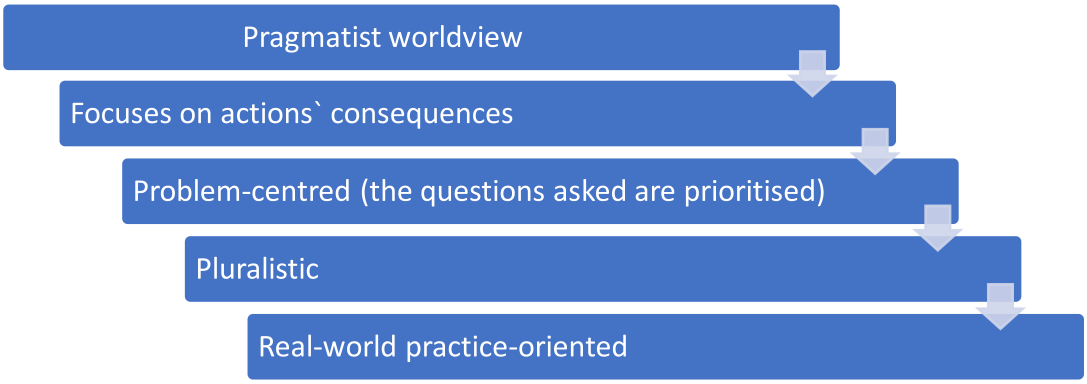


Figure 2. An overview of pragmatists' worldview (Creswell and Creswell 2018).

Johnson et al. (2007) defined mixed methods as a research approach during which a researcher or a team of researchers mixes the components of qualitative and quantitative methods, e.g. utilising qualitative and quantitative perspectives, data collection, analysis or inference techniques, to widen and deepen knowledge and validation for the study`s findings. Hence, adopting a pragmatic approach provides me with the opportunity to combine qualitative and quantitative methods, and to offer a rational explanation from a philosophical point of view (Curry et al. 2013). Adopting a pragmatic approach will improve the study`s data by taking into consideration the fact that I followed a clear framework which guides the phases of the research process in terms of choosing the most appropriate research design, data collection and analysis methods (Wahyuni 2012).

Pragmatism has been used by me as the philosophical methodology because this research is not only designed to gather a deep understanding of people's experiences, but also to explore and to attain an in-depth comprehension of experiences of people with CLBP. The study aim is to explore and to understand the experiences of people with CLBP living in Kuwait who are seen as active copers compared to passive copers, and to understand how this impacts on SMS following physiotherapy discharge. Additionally, utilising a pragmatism philosophical worldview will be advantageous in exploring physiotherapists’ perceptions about patients` abilities to self-manage their CLBP following physiotherapy sessions.

3.3 Qualitative and quantitative research designs

The collection of qualitative data is an inductive approach that permits theory to arise from the data (Thomas 2006). This can be used to explore participants` perceptions to offer an in-depth understanding of specific phenomena (Robson 2002). Qualitative research can involve interview transcripts, observations of non-verbal communication, which can be hard to quantify (Griensven et al. 2014). Qualitative research plays a significant role in physiotherapy clinical practice. Examples include explorations of patients’ experiences of a delivered therapy, the utilisation of communication styles, or physiotherapists` views of professional competence, all of which are appropriate for qualitative inquiry and analysis (Griensven et al. 2014). Silverman (2011) reported that a key weakness of qualitative methods is that they are often conducted on small samples. However, attaining generalisability is not the purposes; rather, the goal is to provide an in-depth understanding or to develop theory. A purposive sampling method was used in this study; this is chiefly utilised in qualitative studies where the researcher selects the participants that suit the aim of the study (Bernard 2002; Etikan 2016), and thus obtain a deeper understanding of issues.

Conversely quantitative methods utilise a deductive approach to test hypotheses and to empower the researcher to investigate issues in the broader population, utilising tools such as cross-sectional surveys and cohort studies (Robson 2002; Creswell 2009). Deductive approaches allows data analyses to test whether findings are consistent with earlier assumptions, or hypotheses in order to reduce bias, to improve validity and to allow the repetition of procedures (Thomas 2006; Griensven et al. 2014). Generally, random sampling is utilised to improve the generalisability of research results in quantitative research (Marshal 1996; Onwuegbuzie and Collins 2007). Data attained from this approach are numerical and data normality, independence and equal variances are elements to account for when determining what types of statistical analysis to use (Johnson and Onwuegbuzie 2004; Creswell and Zhang 2009). However, quantitative methods do not provide the deep understanding of complex psychosocial issues that qualitative methods can offer (Marshall 1996; Creswell et al. 2006). Thus, a mixed methods approach offers a way to explore complex phenomena from a practical standpoint.

3.4 Rationale for selecting a mixed method approach

Creswell (2003) stated that it is critical to realise that researchers begin a project with specific beliefs about how and what they will absorb and learn during their investigation, irrespective of the adopted paradigm. Such beliefs, as discussed previously, can be centred on philosophical assumptions, i.e. epistemologies and ontologies (Crotty 1998). Mixed methods design offer researchers approaches to obtain different types of data that help build a thorough understanding of complex phenomena (Curry et al. 2013). However, quantitative and qualitative designs originate from different paradigms, as stated previously, which is a concern associated with utilising mixed methods (Bryman 2015). Guba and Lincoln (1994), Creswell (2003) and Clark, and Ivankova (2015) argued that each single paradigm is related to distinctive assumptions, methodologies and methods. Many authors, such as Morgan (1998) and Johnson and Onwuegbuzie (2004), suggested that mixing qualitative and quantitative approaches does not necessarily involve mixing their paradigms. For example, surveys and interviews cannot be realistically combined in a single research project owing to the paradigm differences; however, when conducting a mixed methods approach, the results from the two approaches can be combined in the interpretation phase (Bryman 2015). A rationale for mixing two different methods is needed to justify why this combination is appropriate for a specified study and how it is to be executed. For instance, Morgan (1998), Robson (2002) and Creswell (2009) reported that the possibility of any future research design, albeit using a single or mixed approach, relies on its relevance to answer the research question(s) and on what kind of data can be collected.

In the world of social and healthcare research, the use of mixed methods is considered necessary in order to eliminate potential bias by merging the strengths and weaknesses of the qualitative and quantitative approaches (Denscombe 2015; Creswell and Clark 2018). For instance, the quantitative strand can provide statistical power and generalisability, whilst the meaning, context and depth is encompassed by the qualitative element (Teddlie and Tashakkori 2009; Griensven et al. 2014). In this study, the quantitative phase did not intend to reach generalisability, but was used to provide additional colour and detail to the qualitative part. This had been identified as a rationale for applying mixed methods research and had been termed developmental owing to the sequential utilisation of the first phase of the study followed by further investigation in the second phase (Greene et al. 1989). For instance, in the current study, semi-structured interviews were used in the second phase to gain a deeper understanding of participants and to support the proposal system of classification approach of the first quantitative phase.

3.5 Type of mixed method designs

Determining the research design is key for any method used, including mixed methods research, since this facilitates the selected methods for studies and offers the rationale for the way in which investigators analyse and explain the research findings (Creswell and Plano Clark 2011). The most common designs indicated in the literature for integrating qualitative and quantitative methods include, convergent parallel, exploratory sequential, explanatory sequential and the embedded designs. (Hesse-Biber and Leavy 2008; Creswell and Zhang 2009; Creswell 2014),

Convergent refers to a method by which data are gathered by both quantitative and qualitative approaches simultaneously, but each analysis is conducted separately (Creswell 2014). The findings are then integrated in the overall interpretation, aiming to attain complementary data of different forms on the same topic that allows a better understanding of the research question (Creswell 2014). Equal priority should be given to both the quantitative and qualitative components in this design (Creswell and Clark 2011).

In the sequential designs, either explanatory or exploratory approaches are implemented. **In explanatory sequential design,** the quantitative phase is conducted first, including data collection and analysis, followed by the qualitative phase of data collection and analysis. In this design, the quantitative phase is given the priority with respect to addressing the research inquiry, and the qualitative phase is used to build on the quantitative findings to give additional explanations. The key element is that the researcher is required to clarify and interpret how the qualitative findings may assist in explaining the quantitative data. This design is mainly helpful when the researcher aims to explain the process or reasons underlying quantitative data and statistical results (Creswell and Clark 2011; Creswell 2014).

Exploratory sequential designs begin qualitatively with patients` perceptions, being explored and analysed initially, followed by a quantitative phase to examine, the initial findings from the qualitative results. The purpose of this design is to generalise qualitative results to a large population. Furthermore, it may be of value when the researcher intends to develop relevant quantitative tools or to identify key variables that remain unknown (Creswell 1999; Creswell et al. 2004). Similar to the convergent design, **the embedded design** is when the qualitative and quantitative data are collected and analysed at the same time, or sometimes sequentially (Hesse-Biber and Leavy 2008). However, according to Creswell and Clark (2011), the qualitative and quantitative data are involved within a larger design, for example, a qualitative phase might be included within a larger quantitative study (Greene 2007). Each form of data improves the overall design in a certain way (Caracelli and Greene 1997; Greene 2007). The basis of this design is that resorting to a single data type is insufficient for answering the research question, thus, the second data set is required but given less priority (Hesse-Biber and Leavy 2008). This design is considered suitable when the researcher needs to answer various questions and to improve the use of a quantitative or qualitative design. The challenges are determining at what point the second data set is to be collected in the study, and how to combine and to report the findings (Creswell and Plano Clark 2011).

Further mixed methods designs were explained by (Hesse-Biber and Leavy 2008; Leech and Onwuegbuzie (2009); O'Cathain et al. (2010) and these designs are summarised in the Table 3.1 (Appendix 2).

3.6 Rationale for selecting partially mixed sequential dominant status design

I applied partially mixed sequential dominant status design (Leech and Onwuegbuzie 2009) since this could deliver inclusiveness in the data as discussed below. A mixed methods designs enabled me to investigate certain phenomena, e.g. CS and SMS for individuals with CLBP in Kuwait and to compare the findings attained from different methods, i.e. quantitative and qualitative, thereby enhancing the credibility of the data (Bryman 2015). It is vital to take the order of research method employment into account; for example, by deciding whether the employed research phase is started qualitatively or quantitatively before starting the research process (Ritchie et al. 2014). In this study, the first phase involved a quantitative approach with CLBP patients, completing PROMS collected no more than two weeks prior to physiotherapy treatment. The second phase initially was quantitative (repeated PROMS data) followed by a qualitative approach for the CLBP patients at 4-8 weeks after the physiotherapy sessions. Qualitative data were collected from physiotherapists at any time during the study as these comprised opinions about CS and SMS in patients with CLBP but were not related to the patient data gathered in phases 1 and 2.

The quantitative data allowed subgrouping of patients with CLBP into PAS and PPS; this enabled exploration of differences between subgroups regarding ability to self-manage CLBP following discharge from physiotherapy. Furthermore, the quantitative data established the impact of physiotherapy treatments on patients with CLBP and their ability to cope with their pain, their anxiety and depression levels, pain scores, and confidence in performing SMS. However, at the time of data collection, this classification approach from the quantitative data had not been validated, and the PSEQ had not been culturally adapted. Therefore, in this thesis, the quantitative data were used as an adjunct to provide additional colour and detail to the qualitative data, including patients' categorisation and descriptions. While the qualitative data were the main focus in this study, it helped in developing an in-depth understanding of how CS impacts the SMS of patients with CLBP and how to best deliver SMS for patients from the perspectives of patients who demonstrated mainly PAS and PPS. The qualitative data phase was also used to explore physiotherapists` reasoning behind their choices of SMS for people with CLBP, and to discuss the proposed classification system. Achieving these goals facilitated a more rounded understanding of the research phenomena. The methods utilised will be discussed extensively in Chapter 4.

3.7 Rationale for selecting face-to-face semi-structured interviews

Qualitative interview methods take the form of structured, unstructured or semi-structured interviews (Robson 2002). In this study, the semi-structured interview was deemed the most appropriate method, enabling flexibility whilst allowing the aims and objectives of the study to be met. Within this approach, I should pay attention to the time of the interviews, be flexible during the interviews, be sensitive to the participants` feelings and be able to control the content of the interview (Adams 2015). This will enable participants not to feel threatened and may build rapport, eventually enabling me to obtain data relevant to the aims and objectives of the study (Adams 2015). Adams (2015) reported that face-to-face interviews usually involve exploring individuals' perceptions and beliefs within a private or non-private setting.

Focus groups are an alternative qualitative method which may help to promote participants' opinions through motivating group interactions (Webb and Kevern 2001; Hills and Kitchen 2009). However, for the current study, it would have been problematic to use focus groups for patients and physiotherapists because there were cultural issues which may have influenced participants' interactions. For example, in Kuwait, it is considered challenging to place people together who do not know each other, such as placing female and male patients together, and some husbands do not allow their wives to be in a group comprised of males and females. Furthermore, there may have been reluctance to speak about CLBP within a group given its multifaceted biospychosocial nature The focus group approach also requires participants to be in one place, and usually requires between 6 and 8 participants (Nyumba et al. 2018) who are expected to be in the same location at the same time. At the time of this study, meeting in smaller, more enclosed spaces was prohibited due to the COVID-19 pandemic, and global policies and regulations recommended that no more than two people should meet in one place. Furthermore, it would be logistically difficult to invite all the participants as leaving home during the pandemic required permission from the authorities (Nyumba et al. 2018).

Virtual platforms would be a suitable alternative option for interviews during the pandemic. However, it was felt that not all participants may be able to use online meetings, as this was an unfamiliar approach in Kuwait, especially amongst the elderly. Hence, a face-to-face semi-structured interview was deemed the most suitable approach to explore individual CS and SMS, as opposed to identifying group opinions achieved by a focus group.

This data collection method was suitable because the study`s purpose was to explore participants' experiences and perspectives of CLBP. Semi-structured allow the participant to deliver their own thoughts (Offredy and Vickers 2013; Barbour 2014), with the researcher initiating the conversation with questions. For example, in this study, semi-structured interviews helped me to lead and to guide the participants to specific areas relevant to the aim and objectives of the study. I acknowledged in advance which points I wanted to cover so I could guide participants to those areas whilst allowing them to express their thoughts freely (Arthur and Nazroo 2003). This flexibility of the interview approach facilitates the emergence of new, unanticipated themes (Offredy and Vickers 2013), and thus appealed to me as opposed to the rigidity of structured interviews.

3.8 Reflexivity

Reflexivity was essential in this qualitative research as the I acted as the main data collector and conducted the analysis (Holloway and Wheeler 2010). Reflexivity is defined as the researcher's self-awareness regarding how they might impact the conducted research (Willig 2001). The process of analysis was one way in which reflexivity was actioned in practice, and this is discussed below.

3.8.1 Reflexive thematic analysis

In this section, I will first introduce Thematic analysis (TA) and the rationale for using it. Secondly, I will discuss and describe the theoretical part of reflexive TA before presenting my positionality within the research. Thematic and content analyses are the most used widely within qualitative research, although they are often used interchangeably, leading to confusion (Sandelowski and Leeman 2012; Vaismoradi et al. 2013). TA is considered to be a constitutive, independent descriptive technique for qualitative analysis, and has been defined as an approach used to identify, to analyse, to organise and to report patterns of meaning inside data (Braun and Clarke 2006). It is an approach which can be used instead of methodologies or theoretical frameworks in other kinds of analysis, e.g. grounded theory, narrative analysis and phenomenology (Braun and Clarke 2006). Similarly, content analysis is a method that codes and categorises texts systematically to seek patterns, redundancy, associations and structure of communication (Vaismoradi et al. 2013). Although TA and content approaches share similar definitions and goals, the content analysis approach would permit both qualitative and quantitative data analysis through the interpretation and description of counts and incidence of coded transcripts (Elo and Kyngäs 2008).

The rationale for using TA in this study is that it would deliver a thorough description of qualitative findings in a flexible way and allow for the analysis of the perceptions of the research participants, underlining similarities, and differences, and generating unexpected insight (Braun and Clarke 2006). In addition, TA would rely on the clustering codes providing the data interpretation that describe the emerged theme (Braun and Clarke 2012). Together with revising the analysis process, this would reduce the risk of meaning loss (Elo et al. 2014). During the analysis stage, TA combines both manifest (developing categories) and latent content (developing themes) and the analysis of both manifest and latent content cannot be separated from each other (Braun and Clarke 2006), which allows for exploring the similarities and differences in responses (Braun and Clarke 2012).

In contrast, content analysis depends on code frequency to identify a meaning, which may generate a risk of lost data and detaching the meaning of transcripts (Elo et al. 2014). The researchers should decide whether their analysis should be focused on the manifest or latent content of data (Vaismoradi et al. 2013). Thus, combining manifest and latent contents in TA would offer a more in-depth picture of the examined experiences and an appropriate approach to answer the research questions whilst allowing for the examination of emergent phenomena (Braun and Clarke 2012).

Braun and Clarke (2006) reported that TA was a more accessible and flexible approach because it does not depend on one theoretical framework and can be utilised with numerous frameworks. The transparent steps of TA permit the research process to be replicable, explicit and trustworthy, and the non-linear process would also permit the analysis process to be revised, as the more the texts are analysed by the researcher, the deeper the understanding that the researcher would reach (Braun and Clarke 2006). Hence, if data were lost at the early stage of the analysis, it could be revisited and reviewed (Braun and Clarke 2012). The non-linear process enabled me to review the created categories and themes to ensure that they were representing the data and key findings.

TA can be separated into four main categories; coding reliability, codebook, reflexive thematic analysis (reflexive TA), and thematic coding (Braun and Clarke 2014; 2021a; 2023). These approaches share a number of characteristics, such as implementation of coding and theme development; the opportunity of obtaining semantic and/or latent meaning, directing data inductively and/or deductively (Braun and Clarke 2023). This study adopted reflexive TA, thus warranting less discussion on coding reliability, codebook and thematic coding. Braun and Clarke (2019) described reflexive TA as adopting the researcher`s values and the subjective skills into the analytic process. It focuses on the researcher`s reflective judgements on research findings and analytical skills, rather than on following accurate and reliable coding, and reaching unanimity between several coders. The involvement of multiple researchers is not required to determine the quality of the analytic process (Braun and Clarke 2021b). However, the analytic process could involve multiple researchers, and this then can be called collaborative and reflexive, aimed at checking the meaning of notions, or exploring interpretations or assumptions of the data to generate a richer, more accurate reading of the data, rather than searching for unanimity on meaning (Braun and Clarke 2019; Braun and Clarke 2021a)**.** The analysis process is described as interpretative reflexive, by which it can be more theoretical/deductive or inductive. The process of analysing the data requires that researchers become embedded in the data, by reading, imagining, reflecting, writing and questioning it (Gough and Lyons 2015). Developing accuracy of reflexive TA analysis needs time with the data to generate rich themes that may not have been anticipated prior to analysis (Braun and Clarke 2019).

Within reflexive TA, researcher subjectivity is seen as a useful resource rather than a threat to be contained; thus, the approach discards positivist concepts of researcher bias and the idea that coding can be consistently accurate (Braun and Clarke 2023). Recognising the importance of subjectivity, reflexivity and positionality will now be considered.

3.8.2 Reflexivity through positionality

In this section, the theoretical part of positionality and my position in this research will be introduced and discussed. Furthermore, the advantages and disadvantages of being an insider or outsider researcher will be considered and discussed. Positionality refers to the worldview of individuals and the position they adopt in relation to the research task (Savin-Baden and Major 2013; Rowe 2014). It is an essential aspect of qualitative work as it affects how the research is conducted and the findings (Rowe 2014), by contextualising the researcher and research environment (Jafar 2018). Positionality acknowledges the researcher`s own position in relation to their chosen academic work (Savin-Baden and Major 2013; Jafar 2018). The researcher`s assumptions, such as ontological, epistemological perspective, are influenced by an individual`s beliefs and values that are formed by their gender, sexuality, religious faith, social, race, the position of the researcher regarding the participants in the study, such as being an insider or an outsider, and geographical location (Marsh and Furlong 2002; Jafar 2018). My positionality in this research included being an insider physiotherapist where the study was conducted, sharing the same language (Arabic), nationality (Kuwaiti), religion (Islam) and culture to most of the patients and physiotherapists interviewed.

Positionality can refer to three areas: the topic under inquiry, the research participants, and the research framework and process (Gary and Holmes 2020). Some aspects of positionality are also culturally attributed or regarded as constant, such as nationality, gender, skin-color, and race (Rowe 2014). Researchers, therefore, can demonstrate their own positionality through reflexivity, which is key to recognising and understanding what values, opinions, beliefs and actions the researcher holds and how these might directly or indirectly inform data creation and analysis (Braun and Clarke 2019).

A reflexive approach is an important ongoing process for me to recognise, critique, build and clarify my positionality (Gary and Holmes 2020). It requires self-awareness and sensitivity to the cultural and social context because my personal integrity, ethics and social values can impact the research process (Bryman 2016). However, researchers` values are not fixed, and can change over time (Rowe 2014). It has been suggested that reflexivity can be demonstrated by identifying the prenotions the researchers bring into the study, demonstrating previous professional experiences, pre-study perceptions about how things are and what is to be examined, and the motivation for research area (Malterud 2001; Gary and Holmes 2020). Dubois (2015) indicated that by exploring their positionality, the novice researcher becomes increasingly aware of domains where bias might exist. Gary and Holmes (2020) recommended researchers seeking to avoid bias should be as neutral as possible in data collection, its interpretation and presentation of findings. However, when considering the potential for bias, this aspiration of being neutral can never be fully achieved, as the researcher always influences their research in some way.

Herr and Anderson (2005) noted in their conceptual framework of positionality that the researcher/participants are positioned in four areas: insider/outsider positionality regarding the setting under investigation; informal power level inside the organisation/community; position concerning groups in society (e.g. age, race, class, sexual orientation, ethnicity, gender, ability/disability and religion), and position regarding ties within and between countries or nations. The researcher`s perspective as insider or outsider will shape how they approach and discuss issues related to epistemology, methodology and ethics in their thesis (Herr and Anderson 2005). Gary and Holmes (2020) described insiders as individuals positioned under a cultural relativist perception, identifying behavior and actions as relative to the individual`s culture and the context in which that behavior is rational and purposeful inside that culture. Mercer (2007) defined insiders as people whose personal biography offers them a ‘lived intimacy’ and a prior knowledge of the group being studied. Informal language, spelling, and grammar can exist within the interview transcriptions verbatim, ensuring the participant’s true voice is heard, and prior theories and assumptions are disregarded (Gary and Holmes 2020).

However, the outsider researcher is positioned within a realist standpoint, attempting to outline differences across cultures regarding a general external standard and from an ontological position that supposes a pre-determined reality with regards to the researchers subject relationship (Nagar and Geiger 2007). Mercer (2007) defined outsiders as researchers who do not possess any familiar knowledge of the group being studied and should be culturally neutrality (e.g., free of cultural references or terminology) and terminology should be suitable for a community of external researchers. As such slang language would be excluded in interview transcription, and grammar and spelling would be corrected (Gary and Holmes 2020). The ontological stance of outsider researchers assumes that objective knowledge depends on the points to which researchers can separate themselves from the bias of the social groups they investigate (Kusow 2003).

There are several arguments regarding the advantages and disadvantages of insiders and outsiders. Kusow (2003) claimed that the insider’s standpoint questions the capability of outsider-researchers to efficiently comprehend the experience of participants within the culture, whilst the outsider’s standpoint questions the capability of the insider-researchers to competently separate themselves from the culture to examine it without bias. Numerous advantages of being an insider-researcher are noted, one is that the researcher belongs to the culture being studied, leading to easier access to that culture (Sanghera and Thapar-Bjørkert 2008). Moreover, the participants might trust the insider researcher so they might provide more honest answers, generate richer, and deeper understanding of the culture and thus the issue being investigated (Gary and Holmes 2020). Also, the researcher can comprehend various forms of language, encompassing colloquial expressions and non-verbal cues, facilitating a deeper understanding of the data.

However, the insider position can pose some disadvantages (Merriam et al. 2001; Herr and Anderson 2005), such as the researcher may be inadvertently biased or excessively sympathetic to the culture, and being knowledgeable about the culture or tied by tradition they are unable to ask taboo or provocative questions (Gary and Holmes 2020). Moreover, the participants might presume that the insider researcher might have better knowledge than they do, or assuming that their understanding aligns closely with the researcher`s. Hence, participants may refrain from sharing basic information under the assumption that the researcher already knows it. In addition, participants might be less disposed to disclose sensitive information to an insider researcher compared to an outsider (Gary and Holmes 2020). The issue of reflexivity and positionality will be discussed in relation to the current project in the next chapters, (e.g. 4, 6, 7 and 8).

3.9 Summary

The research paradigm is an essential concept of research. This research adopts the pragmatism worldview as the philosophical underpinning for mixed method research, as this assumption provided me with the opportunity to merge qualitative and quantitative methods together with a realistic justification from a philosophical perspective. Theoretically, implementing mixed methods can help minimise potential bias by combining the strengths and limitations of qualitative and quantitative approaches. However, this research had different rationale, that of, focusing primarily on qualitative data to support the proposal of a system to categorise patients as patients who adopted mainly active CS (PAS) and those who mainly adopted mainly passive CS (PPS), whilst the quantitative data were used to provide more context and depth to the qualitative data regarding patient's categorisation and descriptions. Therefore, this mixed method study implemented partially mixed sequential dominant status design where the study began with quantitative data followed by exploratory face-to-face semi-structured interviews with the participants. TA was seen as suitable for this study as it would deliver a thorough description of qualitative findings in a flexible way and allow for the analysis of the perceptions of the research participants, underlining similarities, and differences. In addition, the non-linear process would permit the analysis process to be revised, thereby developing a deeper understanding of the data. The transparent steps of TA would also allow the research process to be replicable, and trustworthy. Reflexivity and positionality influence the findings of qualitative research; thus, they are important concepts that I need to consider. Whilst the theoretical aspects of reflexivity and positionality have been discussed in this chapter, these concepts as they stand in relation to my current project will be reflected in the following chapters, specifically chapters 4,6,7 and 8.

Chapter 4: Methods

4.1 Introduction

This chapter presents and explains how qualitative and quantitative research methods were combined and applied in this study. It discusses the study design, the setting, participant recruitment, data collection processes, ethical considerations, dissemination, risk assessment and data analysis. Finally, my reflections throughout the entire study on my role as the researcher are captured.

4.2 Study design

4.2.1 Mixed methods: partially mixed sequential dominant status design, using questionnaires and semi-structured interviews.

The primary aims were to explore Patients` CS responses and their perspectives about SMS following physiotherapy in the specific cultural context of Kuwait and physiotherapists` perceptions regarding patients` SMS. The secondary aims were to observe patient changes using PROMS related to pain, anxiety and depression, patients` confidence toward SMS and patients` coping style, and risk of having persistence pain among between pre- and post-physiotherapy treatments. Furthermore, the qualitative data from the primary aim provided provisional data to the proposed system to categorise patients as patients who adopted mainly active CS (PAS) and those who mainly adopted mainly passive CS (PPS).

Attaining an overall understanding of CS and SMS for patients with CLBP requires an in-depth inquiry. This was achieved by using both quantitative and qualitative data collection processes, while this study mainly focused on the qualitative data forming a partially mixed sequential dominant status design method. These approaches addressed the gaps that are noted in literature review chapter.

4.3 Setting and recruitment procedure

4.3.1 Sampling of patients and physiotherapists

Mason (2010) argues that qualitative researchers invariably follow the notion of data saturation to determine sample size, that is, gathering new data until it does not reveal any further information about the issue under investigation. However, the idea of data saturation is derived from grounded theory (Lincoln and Guba 1985) and is not appropriate to all forms of data collection and analysis (Hennink and Kaiser 2022). For example, Braun and Clarke (2021c) stated that in reflexive TA, the quality of coding originates from a deep understanding of the data and reflexive interpretation, making saturation difficult to align. Code, themes or data saturation are feasible in many forms of TA because there is a solid conception for defining when nothing new is to be sought from the data, however; it has been argued by Braun and Clarke (2021c) that the concept of data saturation cannot be aligned with reflexive TA assumptions, as there will always be the possibility for new interpretation when working with complex and rich data. Additionally, codes in reflexive TA can increase, develop, be renamed or collapsed with other codes, or be cancelled, and these potential changes reflect the in-depth involvement by the researcher with the data. Thus, the nature of reflexive TA makes it difficult to reach an end point of data analysis, so that I could decide when to stop moving backward and forward on the data to produce the report. Therefore, the concept of data saturation in reflexive TA is best avoided (Braun and Clarke 2021c).

Regarding sample size, Braun and Clarke (2021c), suggested researchers reflect on their study with respect to the depth and focus of the research questions, the data collection methods, the population diversity, the research purpose and the aim of using reflexive TA, followed by an anticipation of lower and upper sample size that might produce sufficient findings to reveal a depth, multifaceted picture about the phenomena (Sim et al. 2018; Braun and Clarke 2021c). I should then finalise the decision regarding the final sample size to be not too large nor small to avoid ethical issues. For example, Francis et al. (2010) argued that larger sample sizes in qualitative research than are required leads to ethical issues, such as wasting study funds and time. Nevertheless, too small sample sizes lead to wasted time and effort as there may not be enough data to answer the research question (Hennink et al. 2017).

As discussed, the sample size in reflexive TA is not determined by following the concept of data saturation, but can be specified based on the researcher’s perception of the study`s requirements and considerations of available resources (O’Reilly and Parker 2013; Braun and Clarke 2021c). Therefore, for the qualitative phase, I followed the concept of ‘reaching a deep understanding of the data’ to determine and judge the sample size, which was determined at 10 patients with CLBP, and 6 physiotherapists. It was anticipated that this number would allow for an in-depth exploration of issues to reach a deep reflexive understanding of the data, following refinement of codes, categories and theme development (Braun and Clarke 2021c). As this study requires a comparison between the two groups of patients (PAS and PPS), the recruitment process for interviews was continued until 10 patients were recruited i.e. 5 in both the PAS and PPS groups.

Group allocation was determined by eligibility criteria (Table 4.1) and measures of patients` confidence and their reliance on medication from the PSEQ (Nicholas 1989), their anxiety and depression levels from the Hospital Anxiety and Depression Scale (HADS) (Zigmond and Snaith 1983), and their CS from the PCSQ (Rosensteil and Keffe (1983) . These measures were used as a proposal system of categorisation, allowing the subgrouping of CLBP patients into one of the two cohorts. Several patients with CLBP were approached (n=33) but I purposefully continued recruitment until 5 CLBP patients were enrolled within each group (Figure 3).

4.3.2 Patients with chronic low back pain

Study patients were recruited from the routine Physiotherapy waiting list at the Farwaniya Hospital, Kuwait. Referrals to physiotherapy were screened by a third party, i.e. a specialist physiotherapist working within the physiotherapy department and myself. All patients were initially contacted by telephone or in person by the third-party physiotherapist, who sought their permission to be telephoned or contacted in person by myself and invited to take part in the research study. Potential patients could also find my contact details on a poster that was placed in the department within the patients’ waiting area (Appendix 3). Patients were given the freedom to choose to contact me directly via email or phone. I screened potential patients by phone, email or in person with respect to the study eligibility criteria (Table 4.1), providing them with abridged information about the study and obtaining their permission to send them the information sheet via email. Patients who wished to participate in the study emailed or phoned me directly. All patients would attend their physiotherapy treatment as routine and so no preferential treatment would be given in terms of reduced waiting times. All patients who contacted me directly were offered the opportunity to be contacted either by phone or email to answer any queries and to apply screening questions in relation to the study inclusion and exclusion criteria.

Table 4.1. Inclusion and exclusion criteria for people with chronic low back pain.

Inclusion criteria	Exclusion criteria
Aged 18 to 65 years. Having low back pain (more than 3 months duration). The ability to understand written and verbal Arabic language. Had no physiotherapy sessions to date.	Congenital anomaly of the spine, impaired sensation in lower limbs and genital area, cognitive impairment. Low back pain with radiculopathy, including nerve root compression. Rheumatoid arthritis. Spinal infection, ankylosing spondylitis, spinal stenosis linked to rheumatoid arthritis and previous spinal surgery. Tumour, systemic lupus erythematosus, or osteoporosis, cancers, cauda equina syndrome. Current pregnancy or breastfeeding. Difficult to be placed in patients who have adopted mainly active or a passive coping strategies groups.

Inclusion criteria for patients were considered at two levels: the level of inclusion and exclusion criteria in accordance with other CLBP studies, and the level of inclusion and exclusion criteria due to screening patients (patients were purposively selected into PAS or PPS groups and excluded when they did not fall into the two groups) (Figure 3. Patient recruitment flow chart).

At the first level, patients were deemed suitable for the study if they were aged 18 to 65 years, in keeping with most of the Arabic and Western literature exploring CLBP populations (Crowe et al. 2010; Kawi 2014a; Alamam et al. 2019; Maki et el. 2021). Patients were also included if they had LBP of greater than 3 months` duration according to the definition of CLBP. The exclusion criteria, i.e. red flags, were based on Waddell (2004) and Koes et al. (2010). Any potential patients who displayed red flags were immediately referred for further investigation and were not recruited.

At the second level, the inclusion criteria were intended to meet the aim of the study i.e. in relation to active or passive CS. Those who initially demonstrated an almost equivalent level of using active and passive CS and could not be easily categorised as active or passive copers were excluded. For example, some patients scored high in PSEQ (active CS), low in item-7 of PSEQ “I can cope with pain without using medication despite the pain” (Passive CS), had normal levels of anxiety and abnormal levels of depression from HADS (active and passive CS), and the most dominant CS from PCSQ were passive CS followed by active CS. In this case, patients were excluded because it was difficult for me to allocate patients into either the active or passive CS group.

4.3.3 Physiotherapists

Six physiotherapists from Farwaniya Hospital, Kuwait, were recruited to take part in face-to-face semi-structured interviews to understand their opinions and reasoning about their approach and rationale towards delivering SMS for patients with CLBP. Physiotherapists' recruitment was terminated when a deep understanding of the data within the practical confines of the time frame for this PhD study was reached. The physiotherapists' recruitment process included posters (Appendix 4) placed in physiotherapist staff rooms in the Physiotherapy Department, Farwaniya Hospital. I presented a summary of the research and provided information sheets at break time (Appendix 5), which was mainly immediately after Dhuhr prayer. Information sheets and contact details were given so that they could contact me if interested. The poster stated that participation was voluntary and physiotherapists who wished to participate could withdraw at any time. The poster included information on the eligibility criteria, and my contact details. Inclusion criteria for the physiotherapists are presented in the Table 4.2.

Table 4.2. Inclusion and exclusion criteria for physiotherapists

Inclusion criteria	Exclusion criteria
Being a physiotherapist specialist or above with over 10 years' experience. Currently working in musculoskeletal physiotherapy service. Having treated chronic low back pain patients within the last 6 months. Able to communicate in verbal and written Arabic. Members of staff at Physiotherapy Department, Farwaniya Hospital, AL-Farwaniya Governorate, Kuwait	Being junior grades less than 10 years experience. Working in any services other than musculoskeletal.

The inclusion criteria for physiotherapists were determined by myself. The reason for including Physiotherapists that were specialist or above with over 10 years' experience rather than junior staff was that they should be able to draw on more experience of management of people with CLBP. Selecting specialists who had treated CLBP patients within the last 6 months ensured that they were familiar with the CLBP condition and able to respond to questions to fulfil the study aims.

4.4 Data collection

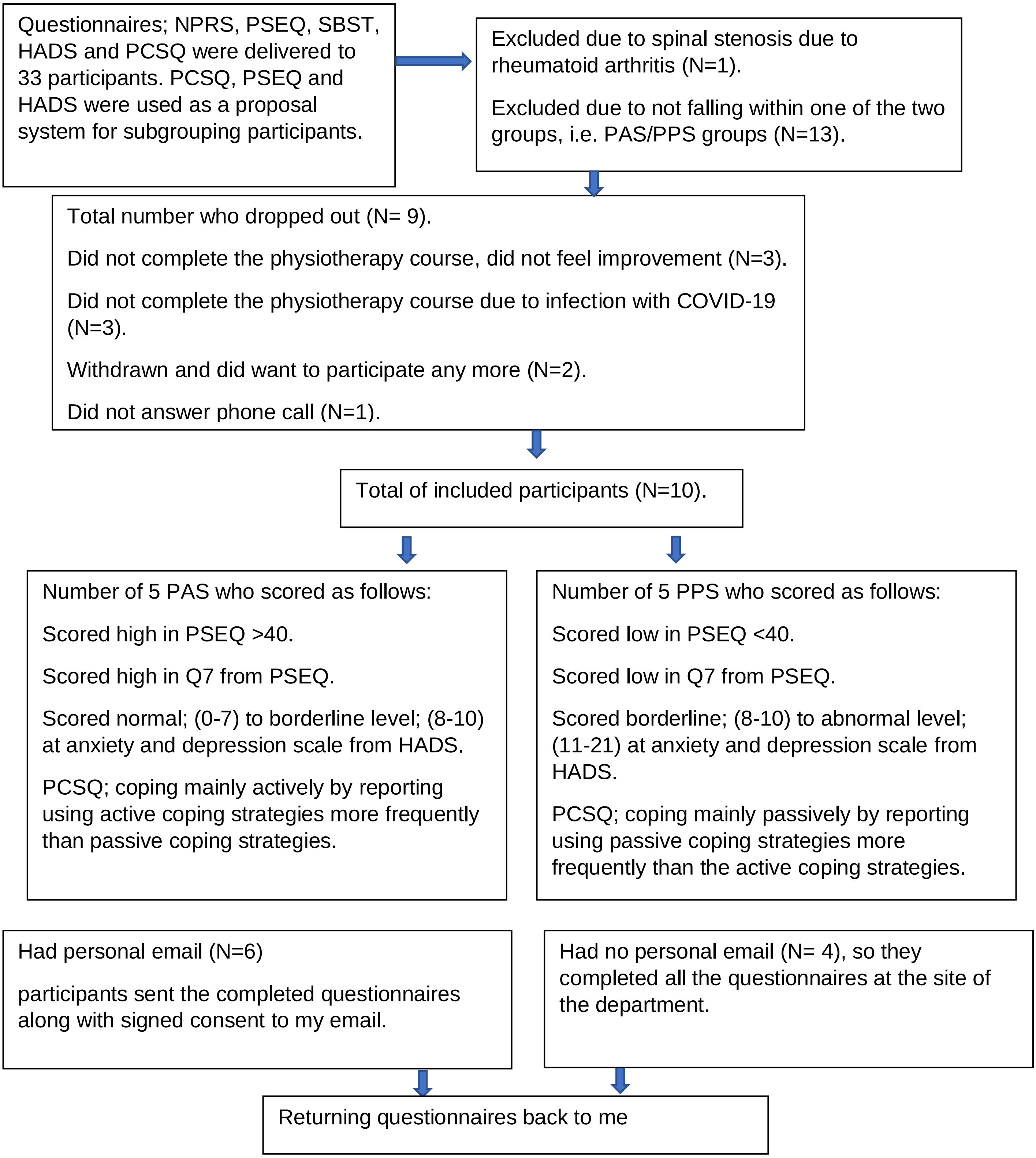
4.4.1 Patients with chronic low back pain

The data were collected in two phases, i.e. quantitative and qualitative. The data collection methods are described below.

4.4.1.1 Phase 1: Pre-physiotherapy sessions

The quantitative phase started prior to physiotherapy treatment at a maximum of two weeks before patients started physiotherapy treatment. All patients wishing to participate and who met the criteria were then emailed an information sheet (Appendix 6), consent form for questionnaires (Appendix 7), sociodemographic sheet for patients details (Appendix 8) and five PROMS regarding: (i) pain intensity, i.e. the Arabic Numeric Pain Rating Scale (ArNPRS) (Appendix 9); (ii) anxiety and depression, i.e. the Arabic Hospital Anxiety and Depression scale (ArHADS) (Appendix 10); (iii) stratified therapy, i.e. the Arabic STarT Back tool (ArSBST) (Appendix 11), (iv) the Arabic Pain Self-Efficacy Questionnaire (ArPSEQ) (Appendix 12) and the Arabic Pain Coping Strategies Questionnaire (ArPCSQ) (Appendix 13). These were to be returned either via email or in person to the Physiotherapy department. Patients who did not have an email account or did not prefer to receive the questionnaires via email were requested to complete them at the physiotherapy department, to be collected immediately or during the first physiotherapy session. Patient recruitment is demonstrated in the following flowchart (figure 3).

The classification approach for patients is extensively discussed in Section 4.6.1.1. Patients were offered a 5 Kuwaiti Dinar voucher once they had completed all the requested documents to thank them for their participation, but all refused the voucher. They were also asked about their preferred method of being contacted for data collection for phase 2.



Questionnaires; NPRS, PSEQ, SBST, HADS and PCSQ were delivered to 33 participants. PCSQ, PSEQ and HADS were used as a proposal system for subgrouping participants.

Excluded due to spinal stenosis due to rheumatoid arthritis (N=1).

Excluded due to not falling within one of the two groups, i.e. PAS/PPS groups (N=13).

Total number who dropped out (N= 9).

Did not complete the physiotherapy course, did not feel improvement (N=3).

Did not complete the physiotherapy course due to infection with COVID-19 (N=3).

Withdrawn and did want to participate any more (N=2).

Did not answer phone call (N=1).

Total of included participants (N=10).

Number of 5 PAS who scored as follows:

Scored high in PSEQ >40.

Scored high in Q7 from PSEQ.

Scored normal; (0-7) to borderline level; (8-10) at anxiety and depression scale from HADS.

PCSQ; coping mainly actively by reporting using active coping strategies more frequently than passive coping strategies.

Number of 5 PPS who scored as follows:

Scored low in PSEQ <40.

Scored low in Q7 from PSEQ.

Scored borderline; (8-10) to abnormal level; (11-21) at anxiety and depression scale from HADS.

PCSQ; coping mainly passively by reporting using passive coping strategies more frequently than the active coping strategies.

Had personal email (N=6)

participants sent the completed questionnaires along with signed consent to my email.

Had no personal email (N= 4), so they completed all the questionnaires at the site of the department.

Returning questionnaires back to me

Figure 3. Patient recruitment flowchart.

Key: NPRS= Numerical Pain Rating Scale, PSEQ= Pain Self-Efficacy Questionnaire, SBST= STarT Back screening tool, HADS= Hospital Anxiety and Depression Scale, PCSQ= Pain Coping Strategies Questionnaire, PAS= patients who adopted mainly active strategies, PPS= patients who adopted mainly passive strategies, >; higher, <; lower, Q = question. N=number of patients.

4.4.1.2 Phase 2: Post-discharge from physiotherapy

This was a quantitative and qualitative phase and commenced at 4-8 weeks post-discharge. I ascertained when treatment had started by contacting the physiotherapy department. Once discharged, the treating physiotherapist contacted me regarding the patient's discharge. When any patient was discharged, I set an appointment by phone for the participant to attend a second data collection session in a meeting room inside the Physiotherapy Department at Farwaniya Hospital. Prior to the interview, the patients were asked to sign a consent form for the interview (Appendix 14), to complete sociodemographic data including patients' details, and to repeat the same PROMS used in phase 1.

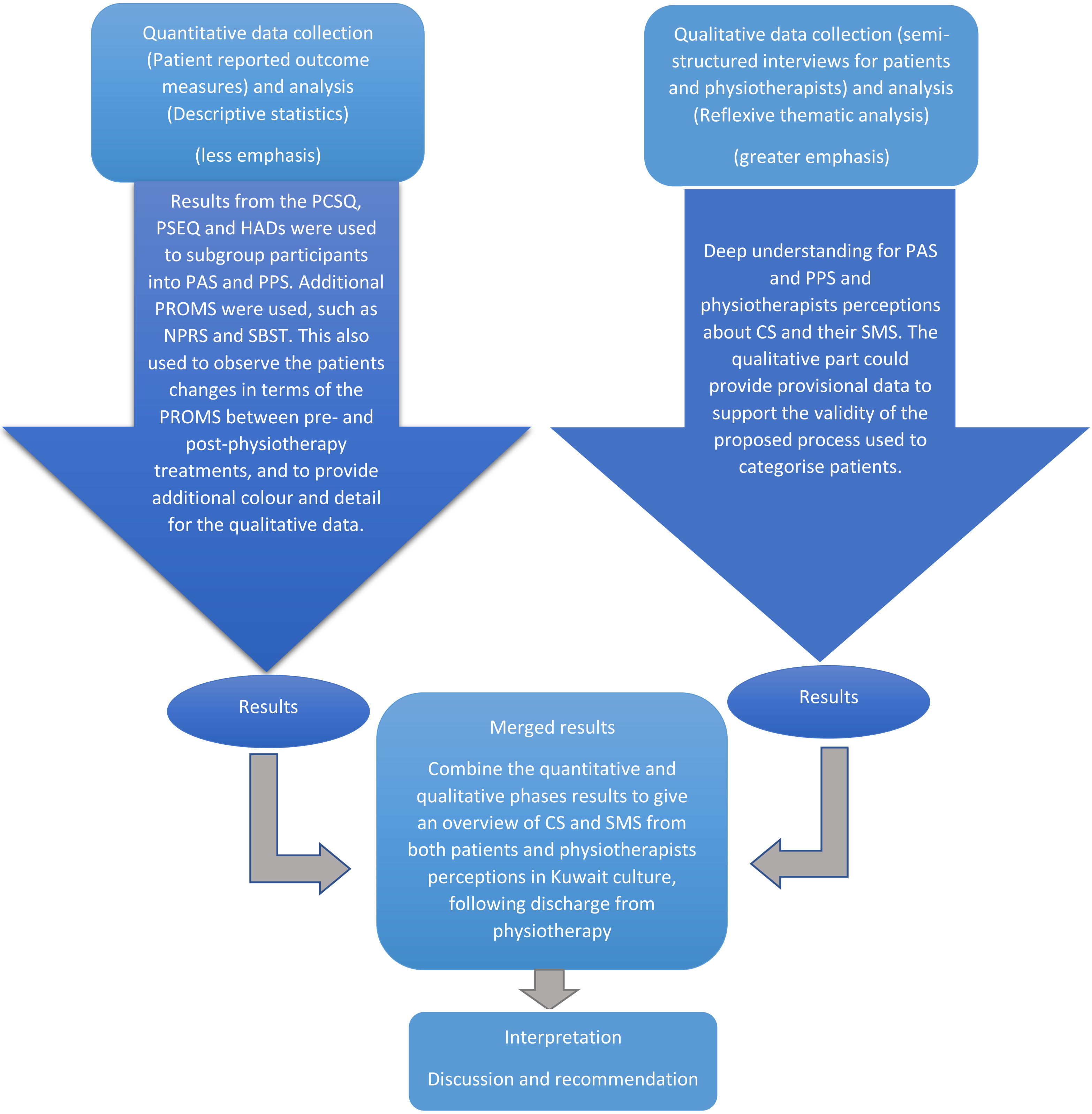
Each patient then participated in a face-to-face interview with me using a semi-structured interview regarding the SMS that they have been utilising following their discharge from physiotherapy. Each interview lasted approximately 1 hour. The nature of the qualitative semi-structured interview is discussed later in this chapter. The questions were developed based on reading the literature regarding CS responses and SMS. The interview schedules were the same for the two groups to enable me to explore the patients' CS deeply together with how these could affect the SMS they used following the course of physiotherapy.

These questions were divided into three main parts; (i) general information about their LBP; (ii) advice that they had been given by physiotherapists; and (iii) how they managed their LBP including flare of symptoms (Appendix 15). I also recorded details of treatment received including advice and SMS given and how they intended to manage any ongoing symptoms. An example of a patient's interview can be found in Appendix 16.

4.4.2 Physiotherapists

4.4.2.1 Semi-structured interview with physiotherapists

Physiotherapists who were interested in the study and met the eligibility criteria were emailed or phoned by me. All physiotherapists who contacted me directly were offered the opportunity to be contacted either by me by phone or email to answer any queries and to apply screening questions relevant to the inclusion criteria. Physiotherapists were provided with a date and time to attend for the interview. When they attended the interview, they were given the opportunity to ask any questions and to sign a consent form. The interview with all the six physiotherapists was conducted in a private room in the physiotherapy department at Farwaniya Hospital. The physiotherapists were interviewed outside the normal working hours to eliminate distractions and disturbances. The interview schedule and an example of a physiotherapist interview can be found in Appendices 17 and 18, respectively. A brief description of the method used is presented in Figures 4-6.



Quantitative data collection (Patient reported outcome measures) and analysis (Descriptive statistics)

(less emphasis)

Results from the PCSQ, PSEQ and HADs were used to subgroup participants into PAS and PPS. Additional PROMS were used, such as NPRS and SBST. This also used to observe the patients changes in terms of the PROMS between pre- and post-physiotherapy treatments, and to provide additional colour and detail for the qualitative data.

Results

Qualitative data collection (semi-structured interviews for patients and physiotherapists) and analysis (Reflexive thematic analysis)

(greater emphasis)

Deep understanding for PAS and PPS and physiotherapists perceptions about CS and their SMS. The qualitative part could provide provisional data to support the validity of the proposed process used to categorise patients.

Results

Merged results

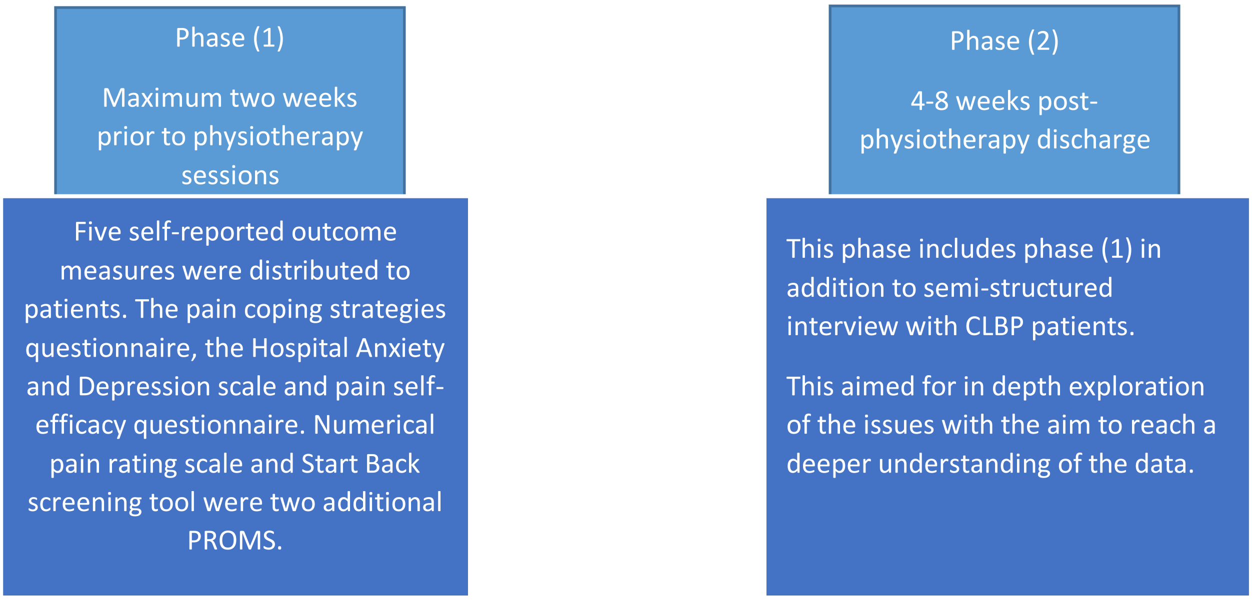
Combine the quantitative and qualitative phases results to give an overview of CS and SMS from both patients and physiotherapists perceptions in Kuwait culture, following discharge from physiotherapy

Interpretation

Discussion and recommendation

Figure 4. Illustration of the methods used in this study

Key: PCSQ= Pain Coping Strategies Questionnaire, PSEQ= Pain Self-Efficacy Questionnaire, HADS=Hospital Anxiety and Depression Scale, PAS= patients who adopted mainly active strategies, PPS= patients who adopted mainly passive strategies, PROMS= patient self-reported outcome measure, SMS= self-management strategies.



Phase (1)

Maximum two weeks prior to physiotherapy sessions

Five self-reported outcome measures were distributed to patients. The pain coping strategies questionnaire, the Hospital Anxiety and Depression scale and pain self-efficacy questionnaire. Numerical pain rating scale and Start Back screening tool were two additional PROMS.

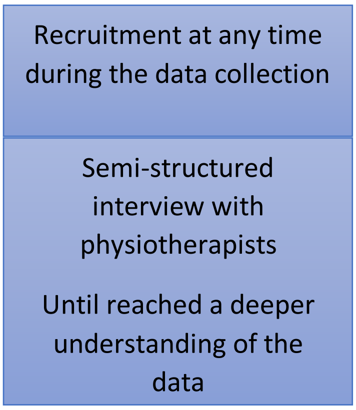
Phase (2)

4-8 weeks post-physiotherapy discharge

This phase includes phase (1) in addition to semi-structured interview with CLBP patients.

This aimed for in depth exploration of the issues with the aim to reach a deeper understanding of the data.

Figure 5. Recruitment of 10 patients with chronic low back pain.



Recruitment at any time during the data collection

Semi-structured interview with physiotherapists

Until reached a deeper understanding of the data

Figure 6. Recruitment of six physiotherapists.

4.5 Ethical considerations

Ethical approval for the study was obtained from Cardiff University's School of Healthcare Sciences Research Ethics Committee (Appendix 19) and from the Ministry of Health of the State of Kuwait (Appendix 20). All collected personal information during the research was kept strictly confidential for the duration of project and an additional 5 years or at least 2 years post publication. This is in accordance with the Cardiff University policy.

4.5.1 Data processing, storage and handling

I used the Cardiff University Guidance for Managing Research Records and Data when selecting the data storage location and data considerations. This involved data size, physical security, possible hazards, the backing up process and media storage duration. Immediately after having received the data from all participants, i.e. questionnaires and the interview, the data were anonymised and given a research code number, except for the participants' consent forms. The interview was recorded on an encrypted digital voice recorder and downloaded to my personal computer, which was encrypted, and password protected.

Recordings were transcribed verbatim by me, and then sent to a trusted external agency recommended by Kuwait Allied Health University, which has been used previously to translate participants' anonymous data from Arabic to English. The anonymous data were then kept secured on my laptop. I then reviewed the translation for any missing data and for inappropriate word phrases that may have emerged. Minor changes to the translated scripts were made by me, which involved medical words and terms not translated correctly. For instance, they used muscle elongation rather than stretching muscles. All data obtained during the study were anonymised and remained confidential.

Paper data records for the study were stored at Cardiff University after the study was terminated in a securely locked filing cabinet, and audio records were stored in encrypted folders on the University 'H' drive. Once written notes had been taken from the interview by me, the tape recording of the conversation was destroyed. Only the academic supervisors who are involved in the study were authorised to access the data files during the study for quality and safety check purposes.

A copy of participants' contact details was retained in a specific separate encrypted file which allowed me to contact all participants to arrange the date and time of the interview and to send a reminder to them. This was only retained for the duration of the project and then destroyed. All participants' consent forms will be retained for the duration of the project and an additional 5 years or at least 2 years post publication. They may be accessed by members of the research team and, where necessary, by members of the University's governance and audit teams or by regulatory authorities. Anonymised data may be published in support of the research project and/or retained indefinitely, where it is likely to have continuing value for research purposes. Any quotes used in publications or in this thesis were anonymised and identified by a number and are not identifiable.

4.5.2 Sponsor

The Kuwait Military Attaché Office was the main sponsor for this study. Cardiff University organised the funding processes in Wales.

4.5.3 Risk assessment

The risk of participating in this mixed method study was deemed low. A full risk assessment (Cardiff University) was completed prior to data collection (Appendix 21). During the data collection there was a potentially low risk of emotional stress to the participants and me. These risks were similar to those which most physiotherapists encounter in their daily work.

The interviews for all the participants were conducted in a meeting room at the Physiotherapy Department, Farwaniya Hospital, Kuwait, to ensure privacy and confidentiality. Prior to the interviews, I followed the fire safety alarm guidance for the location of where the interviews were taking place, and all participants were informed about the fire alarm process.

Prior to each interview, this study followed WHO (2020) guidance relating to the pandemic which included putting on masks and gloves, and social distancing of a minimum of one metre. Full details about the COVID-19 risk assessment are in Appendix 22.

During the interview, if there were any discomfort or distress observed in relation to the patients whilst they were talking about their LBP experience and SMS, or if patients felt unhappy with their treatment or lack of resolution of their symptoms, then I had a clinical background which included training and experience for dealing with these situations. This was addressed by reassuring the patients, and educating them about the nature of back pain, the importance of the ongoing SMS and increasing physical activity.

For the physiotherapists, the main ethical issues were dealing with physiotherapists who may have felt under scrutiny regarding their choice or approach to SMS. This was addressed by considering and conducting the questioning in a sensitive and supportive manner to minimise distorting any information presented by the physiotherapists. I also sought support and guidance from the academic supervisors to deal with any situation that arose.

The main burden for the patients was the time taken to respond to the questionnaires and interviews. The estimated time to complete all the questionnaires was calculated through a pilot study to be about 30 minutes. The interviews, for either patients or physiotherapists, lasted for approximately 1 hour. Both I and the participants shared the decision about the preferred time for the interview, and participants were given breaks as required.

4.6 Quantitative study

4.6.1 Self-reported measurements

Five PROMS were given to patients in phases 1 and 2. Three of these (the PCSQ, PSEQ and HADS) were used as a proposed system for categorising patients into PAS and PPS groups. Although the qualitative study was the primary focus of this research, the methods and data analysis are presented in the order they were completed, i.e. quantitative data followed by qualitative data. Other PROMS determined any changes following treatment for CLBP patients. Qualitative data explored patient opinions regarding CS, treatments, and SMS post-physiotherapy sessions. The rationale for using each PROMS is outlined below. As this study was conducted in Kuwait, the Arabic version for each questionnaire was utlised.

4.6.1.1 Pain Coping Strategies Questionnaires, Pain Self-Efficacy Questionnaire and the Hospital Anxiety and Depression Scale as screening questionnaires for this study

Patients with chronic pain use a variety of CS to deal with pain (Rosenstiel and Keefe 1983; Brown and Nicassio 1987) and the literature review discussed several CS studies for people with CLBP. Some showed that adopting active CS was not associated with changes in the risk of developing a new episode of LBP (Mercado et al. 2005; Jones et al. 2006) or changes in pain severity (Carroll et al. 2002).

However, several studies demonstrated that patients with CLBP who adopt high passive CS are associated with increased pain (Carroll et al. 2002), more psychopathology post-treatment (Spinhoven and Linssen 1991; McCracken and Eccleston 2003), a high risk of having persistent disabling LBP (Mercado et al. 2005; Jones et al. 2006), increased likelihood of developing CLBP (Ramond et al. 2011) and emotional distress (Koleck et al. 2006).

Rosensteil and Keffe (1983) highlighted that psychological factors should be examined when evaluating patients’ CS from the PCSQ, as anxiety and depression could lead to patients taking more rest and withdrawal, i.e. negativity that affects CS. Turner and Clancy (1986) suggested the need for further research for more advanced approaches to evaluate patients’ CS. This advanced approach might be achieved by including psychological factors and patients` self-efficacy. The method of analysing CS in this study was based on the method published by Rosensteil and Keffe (1983), Turner and Clancy (1986) and Haythornthwaite et al. (1998), and relies on patients describing how frequently they used CS in the PCSQ, such as reporting the most used CS followed by the second most utilised, up to the least employed. However, using only the PCSQ did not cover all the identified CS from the literature, as noted in Table 4.3. These identified gaps may lead to incorrect classification and possibly inappropriate treatment. Thus, a novel approach was adopted whereby the PCSQ, PSEQ and HADS were all used to subgroup participants.

The CS studies discussed in the literature review indicated that patients are unlikely to adopt only active or only passive CS but may adopt one type of CS more than the other (Rosensteil and Keffe 1983; Jones et al. 2006). Defining patients as active or passive copers may oversimplify the issue, as it indicates they exclusively use one type of CS. Therefore, I employed the term ‘patients who adopted mainly active or passive CS’, indicating that patients may use both types of CS but lean toward one type more than the other.

In contrast to existing studies, including those by Turner and Clancy (1986), Spinhoven and Linssen (1991), Carroll et al. (2002), Mercado et al. (2005), Woby et al. (2005), Jones et al. 2006, Koleck et al. (2006), and Dawson et al. (2011), which have only used PROMS such as PCSQ or VIPMQ to examine CS, this study considered other PROMS in addition to PCSQ (Table 4.3). These included measuring self-efficacy and reliance on medication using the PSEQ, and assessing anxiety and depression levels using the HADS, to determine how frequently CLBP patients used active or passive CS to manage their CLBP pre- and post-physiotherapy sessions (Table 4.3). However, it should be noted that before conducting this study, this approach had not been validated. In addition, relying only on the forward-backward translation method for the PSEQ, as per the guidelines for cross-cultural adaptation of PROMS by Beaton et al. (2000), may not be sufficient for the validation and cultural adaptation of the PSEQ. Therefore, these three questionnaires were used as a proposed system of classification as well as to provide additional colour and detail to the qualitative data with the aim of addressing the research question.

Table 4.3. Active and passive coping strategies found in the literature and patients' self-reported outcome measures used to identify coping strategies.

Active coping strategies	Passive coping strategies	Patients self-reported outcome measures used.
Take the responsibility by not relying on outside source, e.g. physiotherapists, to manage their condition (Snow-Turek et al. 1996).	Not taking responsibility and relying on an outside source (Mercado et al. 2000).	No outcome measure used.
Controlling emotional responses provoked by stressors, e.g. anxiety and depression (Jensen et al. 1991; Bussing et al. 2010).	Inability to control emotion and to regulate stressors, e.g. anxiety and depression (Cabak et al. 2015).	The Hospital Anxiety and Depression Scale
Maintain activities despite the pain, such as exercises (Jensen et al. 1991; Brown and Nicassio 1987; Nicholas et al. 1992; Bussing et al. 2010)	Withdrawal and resting (Kraaimaat and Evers 2003). Depending on medication (Mitchell et al. 2009; Dawson et al. 2011; Buchbinder et al. 2018) .	Pain Self-Efficacy Questionnaire
Pay no attention to pain, or ignoring pain (Jensen et al. 1991; Bussing et al. 2010). Diverting attention away from pain (Brown and Nicassio 1987; Nicholas et al. 1992) Reinterpreting pain sensations (Brown and Nicassio 1987; Nicholas et al. 1992). Coping self-statements (Brown and Nicassio 1987; Nicholas et al. 1992). Increasing behavioural activity (Brown and Nicassio 1987; Nicholas et al. 1992).	Focusing on pain (Mitchell et al. 2009; Dawson et al. 2011). Showing catastrophising behaviour (Turner and Clancy 1986; Nicholas et al. 1992; Brown and Nicassio 1987; McCracken and Eccleston 2003; Vuuren et al. 2006; Hulst et al. 2010). Praying and hoping (Brown and Nicassio 1987; Nicholas et al. 1992). Helplessness (Koleck et al. 2006).	Pain Coping Strategies Questionnaire

4.6.1.2 Pain Coping Strategies Questionnaire

The PCSQ published by Rosensteil and Keffe (1983) was used for screening the most dominant CS for people with LBP (Kraaimaat and Evers 2003). It is reported to be valid and reliable and has strong test-retest reliability (Abbott 2010). The PCSQ has 42 items measuring active and passive pain coping approaches. According to Nicholas et al. (1992), and Brown and Nicassio (1987), the active CS subscales are reinterpreting pain sensations, diverting attention, using coping self-statements, increasing behavioural activity, and ignoring pain sensations. In contrast, praying and hoping, and catastrophising subscales are considered passive CS. Two further items are utilised to evaluate the perceived control over pain and ability and ability to decrease the pain.

Table 4.4. Subscales and relevant item numbers from the Pain Coping Strategies Questionnaire.

Subscales	Items
Reinterpreting pain sensations	1-4-10-16-29-41
Diverting attention	3-9-12-26-27-38
Increasing behavioural activity	2-7-34-39-40-42
Coping self-statement	6-8-20-23-31-32
Ignoring pain sensation	17-19-21-24-30-35
Praying and hoping	14-15-18-22-28-36
Catastrophising	5-11-13-25-33-37
Ability to decrease the pain	44
Control over pain	43

Each subscale of the PCSQ consists of 6 different items, on a scale ranging from 0 to 6. Participants reported how often they used a specific item in a given CS when they experienced pain, where 0 = never use it, and 6 = always, with the maximum score being 36 on each subscale. Harland and Georgieff (2003) criticised the PCSQ validity as some studies have shown inconsistency (Tuttle et al. 1991; Swartzman et al. 1994). Miles et al. (2011) reported that the outcomes of self-management programme are likely to improve by adjusting patients` catastrophising, which can be measured by utilising the PCSQ.

There are several scales that measure CS. For instance, the Pain-Related Self-Statement Scale (PRSSS) evaluated situation-specific cognitions that either encouraged or impeded efforts to cope with pain. Even though the PRSSS demonstrates good reliability and validity (Flor et al. 1993), it does not distinguish

between different coping approaches that patients adopt, but does help to distinguish catastrophising more than CS (Fidelis-de-Paula-Gomes et al. 2022).
Brown and Nicassio (1987) developed the VPMIQ coping scale, which was commonly used to differentiate between active and passive CS, and has demonstrated good validity and reliability for measuring behavioural CS (Jensen et al. 1995). However, this was developed for use in people with osteoarthritis rather than those with LBP (Kraaimaat and Evers 2003). Similar to the PCSQ, CS in the VPMIQ are partially covered.

Although several scales for measuring CS had been developed, there was no single scale applicable to the different categories of patients with chronic pain. For example, there was no one measure of both cognitive and behavioural coping responses (Kraaimaat and Evers 2003). The PCSQ as a self-reported measure, measures cognitive and behavioural CS in people with CLBP (Kraaimaat and Evers 2003). Thus, the PCSQ would be useful as a PROMS to explore the frequency of active and passive CS used by CLBP patients. CS and pain were also linked to each other, with some people with chronic pain being able to ignore pain sensations effectively and have a greater coping ability, whilst others demonstrated the opposite (Haythornthwaite et al. 1998b). The PCSQ has been used extensively in CS research to establish what and how frequently patients adopt CS when in pain. Jensen et al. (1994) examined CS in musculoskeletal pain, Kole-Snijders et al. (1999) assessed CS in CLBP, and Vuuren et al. (2006) evaluated CS in CLBP patients in South Africa. The PCSQ was used to discover how frequently participants used active and passive CS to cope with their pain. However, from Table 4.3 it is evident that the PCSQ covers only 5 active CS out of 7, and 3 passive CS out of 8. Thus, I decided to use the PSEQ in addition to HADS to cover all other CS.

The Arabic Pain Coping Strategies Questionnaire (ArPCSQ) was found to be comprehensible to and suitable for Arabic-speaking LBP patients, and can be utilised as an outcome measure for clinical purposes (Maki et al. 2018). Good agreement has been shown within subscales with the English original version. The ArPCSQ has high test re-test reliability (ICC= 0.85-0.97) and internal consistency (α≥0.70), whilst praying and hoping were found only to be acceptable (ICC= 0.70-0.79) (Maki et al. 2018). Amongst the several CS questionnaires, the PCSQ was the only questionnaire which had been culturally validated into Arabic.

4.6.1.2.1 Pain Self-Efficacy Questionnaire

The PSEQ developed by Nicholas (1989) is based on the theory of self-efficacy (Bandura 1977) and is valid and reliable for determining self-efficacy in CLBP patients (Chiarotto et al. 2016). The PSEQ has good test-retest reliability and high internal consistency with Cronbach’s alpha coefficient of 0.92 in chronic pain patients (Asghari and Nicholas 2001), with a minimal important change of 5.5 for the PSEQ (9% of the scale range) (Chiarotto et al. 2016). Nicholas (2007) reports that the tool consists of 10 elements representing various daily activities or general aspects of life. Foster et al. (1995) explained that self-efficacy is an individual`s belief about how successfully they can cope with difficult circumstances, such as the degree of confidence in performing normal activities and tasks. The patient is required for each item to score how confident they are in being able to execute these activities, despite the presence of pain. For example, “I can cope with pain without using medication despite the pain”. Items are scored on a 7-point Likert scale ranging from 0 to 6, where 0 represents ‘‘not at all confident’’ and 6, ‘‘completely confident’’. The overall score ranges from 0 to 60, with higher scores representing higher self-efficacy. The questionnaire can be administered by physiotherapists as a screening tool which may guide as to how a patient’s beliefs may influence how they react to an exercise programme (Frost et al. 1995; Nicholas 2007). The PSEQ score may provide an indication of the likely maintenance of behaviour, a change of activity or the probability of continuation of work despite pain (Nicholas 2007).

Studies of the PSEQ, such as Vieira et al. (2014) and Ahmed et al. (2019), have demonstrated that low self-efficacy leads to greater disability. Nicholas (2007) and Ferrari et al. (2019) reported that high confidence scores, e.g. >40, indicated patients that were expected to continue treatment and those who were anticipated to have the confidence to respond well to an exercise programme. Ferrari et al. (2019) reported a low self-efficacy score as <40 for people with CLBP and could be interpreted as patients who believe pain relief is essential before they are physically active (Coughlan et al. 1995; Nicholas 2007). The results from Ferrari et al. (2019) demonstrated that CLBP patients with low self-efficacy score used more medication than those with high self-efficacy, which concurs with the findings of Nicholas (2007) and Coughlan et al. (1995).

A strong correlation between the PSEQ and measures of activity would be predicted by the self-efficacy theory, with PSEQ scores assumed to be associated with pain CS (pain-related activities) assessed by the PCSQ (Nicholas 2007). The PSEQ would also be predicted to have a positive correlation with those strategies considered to reflect active approaches, such as the capability to control stressors and pain (Nicholas 2007). For example, the more confidence patients have to complete exercises at home, the more active CS they demonstrate, and this may lead to a decrease in pain. A negative correlation would be anticipated with those coping passively, e.g. praying/hoping and catastrophising behaviour (Brown and Nicassio 1987).

The theory of social learning reveals that higher levels of self-efficacy are linked to lower levels of pain and disability, however patients with low self-efficacy often perceive their pain as unpredictable and uncontrolled and feel guilt and demonstrate a lack of willingness to adopt SMS (Snelgrove and Liossi 2013). Hence, the rationale for using the PSEQ is that it provided a measure of patients` confidence to maintain activities and an exercise programme despite the pain (high self-efficacy score), or alternatively, identifying patients who were more focused on seeking pain relief before engaging in activities (low self-efficacy score). Thus, the PSEQ might be used to measure two CS (Table 4.3), i.e. whether or not the patients are maintaining exercises as a management technique and to measure medication dependency. These two CS are not covered by the PCSQ.

The literature review indicated that the optimal SMS programmes for patients with CLBP are built on the self-efficacy theory, and aim to enhance their confidence to manage their activities of daily living (Lorig et al. 2003; Krein et al. 2007). Thus, it might be useful to measure how confident patients with CLBP are to keep doing exercises prescribed by a physiotherapist following physiotherapy treatment despite the pain and may be a good way to better understand coping styles.

4.6.1.3 Cultural adaptation of Pain Self-Efficacy Questionnaire

The PSEQ has not yet been culturally adapted and so I used a forward-backward procedure (Beaton et al. 2000). The PSEQ was forward translated (FT) from the original language to Arabic by a bilingual translator from a non-clinical background, i.e. a naïve translator, and by a bilingual physiotherapist to produce versions FT1 and FT2, correspondingly. Involving a naïve translator was required to ensure that the academic and medical world would have less influence on the outcome (Beaton et al. 2000). Discussions were directed by me, who is also bilingual, regarding the forward translation in English and Arabic to produce one Arabic version, FT3. In the case of challenges or disagreements between the FT1 and FT2 translators, the opinion of a third translator with a non-clinical background was sought. The FT3 version was then back-translated to English without referring to the original language by another two non-clinical translators, who produced versions BT1 and BT2 to ensure that the translated versions were providing the same item meaning as the source version.

The forward and backward versions, FT1, FT2, FT3, BT1 and BT2, were discussed by me, two academic physiotherapists and the three translators as an expert committee to achieve cultural adaptation. These procedures were adopted from the guidelines for processing cross-cultural adaptation for self-reported measures (Beaton et al. 2000) as noted below:

1. The induction to the questionnaire

2. The questionnaire`s instructions

3. Semantic equivalence

    a) Do the words share the same meaning?

    b) Are there many meanings to a provided item?

    c) Are there any linguistic obstacles, i.e. grammatical difficulties, in translation?

4. Idiomatic equality

    a) Define whether the used phrases have the same meaning with the selected idioms in the Arabic version

5. Experiential equality

    a) Are the provided tasks, if any, experienced in the target culture (Arabic) equally to the original?

6. Conceptual similarity

a) Do the concepts described, if any, represent the similar concept in the pointed culture (Arabic) comparable to the original source?

4.6.1.3.1 Hospital Anxiety and Depression Scale

The Hospital Anxiety and Depression Scale (HADS) was developed by Zigmond and Snaith (1983) and is commonly used to measure psychological distress, depression and anxiety. It is designed for use in non-psychiatric patient populations and the general population (Bjelland et al. 2002; Puhan et al. 2008; Reme et al. 2014). It has 14 statements relating to symptoms of depression and anxiety, e.g. "I can sit at ease and feel relaxed". Each question scores from 0 to 3, and patients were asked about their agreement with the statements or how often they used the strategy, e.g. "definitely”, “not often”, “sometimes” or “not at all". A total score from 0 to 7 represents no depression or anxiety, i.e. normal, 8-10 represents borderline abnormal or borderline case, and 11-21 indicates abnormal.

Bjelland et al. (2002) reported that the scale`s internal consistency is excellent with Cronbach’s alpha ranging from 0.78 to 0.93 for the HADS-A, and from 0.82 to 0.90 for the HADS-D. Additionally, the tool demonstrates high test–retest correlations (r = > 0.80) after ≥ 2 weeks which slowly decrease as time elapses (2–6 weeks, r = 0.73–0.76; > 6 weeks, r= 0.70) (Bjelland et al. 2002). Furthermore, the HADS has demonstrated excellent concurrent validity when compared to most common anxiety and depression scales, such as Beck’s Depression Inventory, Spielberger’s State-Trait Anxiety Inventory, and Symptoms Checklist-90 Anxiety and Depression subscales. The scale demonstrated medium to strong correlations, i.e. HADS-D, 0.60, and HADS-A, 0.80; a similar correlation level was found when HADS-D was compared to the Montgomery Asberg Depression Rating Scale.

Bjelland et al. (2002) reports that there is concern regarding the Beck Depression Inventory-II scale (BDI-II) relating to the inclusion of somatic items within the subscale of physical and emotional disorders. In addition, although BDI-II was proven to be a valid and reliable scale, there were concerns regarding overlapping symptoms between medical conditions and depression (Bejelland et al. 2002). There has also been criticism regarding the HADS scale, with disagreement about the core of the scale`s properities and also relating to the clear lack of consistency between studies. For example, Coyne and van Sonderen (2012) criticsies the exclusion of sleep and appetite disturbance items which could be a good indicator of depression.

Reme et al. (2014) reports that the HADS avoids items of sleep to prevent any overlap with somatic symptoms of physical illness. Norton et al. (2013) conducted a meta confirmatory factor analysis regarding the latent structure of the HADS and recommended that the HADS is the best measure of general distress. They reported that the scale does not demonstrate good separation between anxiety and depression, and which is a problem with all scales measuring anxiety and depression together. However, Brennan et al. (2010) measured the accuracy of the HADS as a case-finding instrument for anxiety and depressive disorders and reported that the HADS is one of the most effective PROMS screening scales, for anxiety and depression as emotional disorders.

The patients’ ability to control emotional responses provoked by stressors, such as anxiety or depression, are considered to be active CS, but passive when they fail to control the stressors (Table 4.3) (Jensen et al. 1991; Bussing et al. 2010), which are not covered by the PCSQ and PSEQ. The HADS is commonly used to detect the level of anxiety and depression that patients with CLBP may display (McCracken and Turk, 2002; Brennan et al. 2010), and can be a useful additional tool pre- and post-physiotherapy which is aimed towards improving patients` self-efficacy measured by the PSEQ (Chiarotto et al. 2016).

Rosenstiel and Keefe (1983) measured anxiety and depression by using two different scales for each item, i.e. the State-Trait Anxiety Inventory (40 items) and the Zung Depression Scale (20 items), together with the PCSQ. However, these two scales are much more time comsuming than the HADS. Thus, in this study, I used the HADS to measure anxiety and depression. In order to reinforce the rationale for choosing the HADS, May (2010) stated that SMS would have limited effectiveness if anxiety and depression were not measured, and HADS may be useful in an initial diagnosis and to monitor anxiety and depression levels (Stern 2014). Martinsen (2008) reported that anxiety and depression were frequently associated with a tendency towards passivity and withdrawal in patients with CLBP, thus, using the HADS may also give insight into these aspects.

The Arabic version of HADS (ArHADS) has been found to be a reliable and valid tool to assess anxiety and depression in hospitalised patients. For the ArHADS anxiety and depression subscale Cronbach alphas were 0.83 (95% confidence interval:

0.79– 0.88) and 0.77 (0.7–0.83), respectively (Terkawi et al. 2017). Amongst other scales measuring anxiety and depression, the ArHADS was the only questionnaire which had been culturally validated in Arabic for the measurement of anxiety and depression.

Two additional PROMS (NPRS and SBST) were chosen to be used for the patients with CLBP and the following section outlines the rationale for their choice.

4.6.1.3.2 Numerical Pain Rating Scale

The NPRS is a self-reported or clinician-administered tool commonly used to measure pain intensity (Jensen and McFarland 1993; Hawker et al. 2011) and can be administered in verbal or written forms (Williams et al. 2000; Kahl and Cleland 2005). It has a single 11-point numerical scale on a horizontal or vertical line with 0 indicating one pain extreme, i.e. “no pain”, and 10 indicating the other pain extreme, e.g. “pain as terrible as you can think”.

The scale asks participants to rate their pain intensity within a certain time frame, such as within the last 24 hours or last week. It has moderate to high test–retest reliability, ranging from 0.67 to 0.96 (Kahl and Cleland 2005), and has a clinically important change of two points (Farrar et al. 2001; Beneciuk et al. 2012). As there was no gold standard for pain measurement, the NPRS has not obtained criterion validity, but has been compared with the VAS which has a criterion validity. NPRS has 0.79 to 0.95 convergent validity (Finch et al. 2002). Hence, administering NPRS was supported by previous values as convergent validity signposts that both tools measure the same concept, and provide similar results.

The rationale for administering NPRS is that it was easy to complete, could be administered verbally by telephone or in writing, and is commonly used for people with LBP/CLBP (Childs et al. 2005; Hawker et al. 2011). The limitation of this tool was that it is a unidimensional scale that assessed one component of pain, i.e. pain intensity, and thus, the nature of the experienced pain due to symptom fluctuations and pain-related disability were not captured (Hawker et al. 2011).

Thus, the NPRS was unlike the McGill Pain Questionnaire (Melzack 1975) and Chronic Pain Graded Scale (CPGS) (Korff et al. 1992), which were both considered multidimensional tools that measured more than one component of pain and demonstrated advantages over the NPRS. Nevertheless, McGill takes a long time to complete and the CPGS might be difficult for patients to complete as the scoring process was considered to be complex compared to the NPRS (Hawker et al. 2011). Although there is a short form of the McGill questionnaire, there is no Arabic version available. However, the NPRS is available and validated in Arabic. The Arabic version of NPRS (ArNPRS) was a valid and reliable tool for measuring pain levels, and the psychometric properties agreed with the commonly used VAS and NPRS (Alghadir et al. 2016). The aim of measuring pain was to observe changes in patients' scores following physiotherapy treatment, and if there were differences between the categories of PAS and PPS.

4.6.1.3.3 The STarT Back Screening tool

Early screening for risk factors is one strategy employed to recognise patients who may be at risk of poor clinical outcomes and chronicity of pain, and to offer a possible approach to enhance efficient and effective physiotherapy (Hill and Fritz 2011). Psychologically informed physiotherapy is seen as a prevention strategy for CLBP that encompasses both biomedical and cognitive behavioural principles (Main and George 2011). The SBST was developed by Hill et al. (2008) to classify people with LBP regarding factors that increased the likelihood of having CLBP, which might be a useful approach to specifically target treatment (Beneciuk et al. 2012). SBST is a 14-item tool, of which 9 items involve factors relating to referred leg pain, comorbid pain, and disability (Hill et al. 2008). The 5 items investigating psychosocial factors are seen as a subscale and include catastrophising, bothersomeness, anxiety, fear and depression. The tool is easy to complete and to score, subgrouping LBP patients as low risk, i.e. total score ≤3, medium risk, i.e. ≥4 total score, ≤ 3 subscore, and high risk, i.e. ≥4 total score, ≥4 subscore (Hill et al. 2008).

Even though fewer subjects were defined as high risk using the SBST, the SBST shows an excellent correlation with the Örebro Musculoskeletal Pain Screening Questionnaire (ÖMPSQ), i.e. r=0.802, (total scores), r=0.769 124 (psychosocial scores) (Hill et al. 2010). Hence, the tool had been identified to be comparable to the ÖMPSQ in categorising patients into low, medium, and high-risk groups regarding comorbid pain, fear, catastrophising, disability and time off work (Hill et al. 2008), and the SBST appears to be able to distinguish between referred leg pain and pain bothersomeness more effectively (Hill et al. 2010). The SBST has shown a high association with the Roland-Morris Disability Questionnaire (r=0.813), and the

Tampa Scale for Kinesiophobia (r=0.659, psychological subscale) (Hill et al. 2010). Thus, the SBST may help to better understand SMS by comparing PAS and PPS with their SBST results. Additionally, the SBST measured FAB which was also considered to reflect psychosocial issues, which may be of value.

The tool had been culturally adapted and validated into the Arabic version (ArSBT). The internal consistency of the ArSBT total score and psychosocial subscale was found to be acceptable and with no redundancy (Cronbach α = 0.7) (Elsabbagh et al. 2019). The ArSBT total score correlated moderately with the Arabic NPRS (NRS-Ar, r = 0.50; Arabic Oswestry Disability Index (ODI-ar), r = 0.51) (Elsabbagh et al. 2019). Medium to high correlations were found between its psychosocial subscale and psychosocial reference measures (HADS-Anxiety HADSA-Ar, r = 0.58; Arabic HADS-Depression HADSD-Ar, r = 0.45) (Elsabbagh et al. 2019).

4.6.2 Quantitative data analysis

4.6.2.1 Level of measurement for each patient self-reported outcome measure

Variables are classified into four categories of measurement scales, such as nominal, ordinal, interval and ratio (Wu and Leung 2017). According to Norman (2010) and Sullivan and Artino (2013), a 5- to 7-point Likert scale is a typical ordinal scale. Responses can be ranked or rated (highest lowest), which gives a meaning of order although the distance between the rankings is not important and may differ. Thus, the PSEQ 7-point Likert scale is an ordinal data range used by respondents to rate their confidence level of activities. Categories labelled as “not confident at all” to “completely confident” were assigned conventional values, i.e. 0-6, and then these categories were treated as numerical numbers (Wu and Leung, 2017).

Similarly, the PCSQ is an ordinal scale as the respondent indicates how frequently they use CS, where 0 = the least and 6 = the most used. The HADS is also an ordinal scale as responses can be ranked into normal, borderline, and abnormal, and can be assigned numbers. The NPRS is also an ordinal scale because pain is expressed on a scale where 0= pain free and 10= maximum pain.

However, the nominal scale is the basic level of measurement and also called qualitative or categorical, based on a characteristic, such as gender, with no sense of order (Allanson and Notar 2020). Standard coding methods utilised are numbers, labels, colours, letters or any other symbol that differentiates between the sets

(Allanson and Notar 2020). An example of a nominal scale could be the SBST. The most included questions (Q1-8) are nominal and where respondents used “agree” or “disagree” to rate their responses. However, question (9) “Overall,each how bothersome has your back pain been in the past 2 weeks?” not at all (0), slightly (0), moderately (0), very much (1) and extremely (1), is ordinal.

The PSEQ, NPRS and SBST were analysed using median and range as the data were not normally distributed. The PCSQ data were expressed as mean and SD for each coping subscale as they were normally distributed. Each subscale of the PCSQ consists of 6 different items, on a scale ranging from 0 to 6. Scores for each individual for each subscale were entered into the Statistical Package for the Social Sciences software (SPSS v. 27) (IBM Corp 2020), to calculate the mean and standard deviation (SD) for each coping subscale. Nicholas et al. (1992) reported another approach to analyse the PCSQ, where there are separate active and passive CS subscale scores. The passive subscales scores are then subtracted from the total active score. The maximum achievable PCSQ score is 108, with a higher score suggesting more frequently adopted active CS. This approach shows the total scores rather than presenting the mean and SD for each subscale. Nicholas et al. (1992) used this approach to examine how two different treatments, i.e. CBT with physiotherapy versus physiotherapy alone, would improve patients` pain, CS, medication intake and self-efficacy. However, in this study, I used mean and SD to analyse the data for each coping subscale and this approach was used by most of the studies relating to CS (Rosenstiel and Keefe 1983; Spinhoven and Linssen 1991; Jensen et al. 1994; Maki et al. 2018).

All statistical analysis was conducted using (SPSS v. 27) (IBM Corp 2020). Patients completed five PROMS pre and post physiotherapy. The data were then analysed using descriptive analysis; mean, standard deviation, mode, range and frequency of scores. These data were tested for normality using the Shapiro-Wilk test, which is appropriate for sample sizes of less than 50 (Mendes and Pala 2003). A proposed system of classification was initiated using the PCSQ, HADS and PSEQ data to subgroup patients into two groups, i.e. PAS and PPS. The data from all the PROMS were analysed pre and post treatment to establish change scores following discharge from physiotherapy and are presented descriptively. Due to the small sample size, further inferential analysis was not deemed appropriate (Neideen and Brasel 2007; Marino 2018).

The method of analysing CS in this study, as mentioned previously (4.6.1.1), was based on Rosensteil and Keffe (1983), Turner and Clancy (1986) and Haythornthwaite et al. (1998) and relies on patients describing how frequently they used CS as listed in the PCSQ, in rank order. Therefore, there are no clear cutoff points that show whether a patient copes actively or passively. However, there is a clear cutoff point for both PSEQ and HADS, showing patients' self-efficacy and emotional responses, respectively. The rationale for using this method of proposed classification i.e. using PCSQ, PSEQ and HADS was previously discussed in section 4.6.1.1. Each participant has been classified and analysed separately according to their scores on the three PROMS, and then the data were tabulated and presented in chapter 5 'patients` quantitative results' (Tables 5.1 and 5.2). Demographic details were reported pre- (for all data) and post-physiotherapy sessions (for data relevant at the point) using frequency for each category. These details were nominal data, i.e. gender, marital status and employment status, and ordinal data, i.e. age, highest education level patients obtained, working pattern, numbers of completed physiotherapy sessions, time off work pre/post physiotherapy sessions and number of LBP episodes patients experienced post-physiotherapy discharge.

4.6.3 Piloting

Piloting the interview questions ensured that they were comprehensive and suitable and established whether the information could be collected in a feasible time frame. Piloting might be necessary to increase the researcher's confidence and to test his interviewing skills. I practised some skills, such as paying attention to the scheduled time, attempting to control the interview's responses whilst allowing the participants to deliver their thoughts freely. Further skills practised were related to being sensitive to participants' feelings, for example any reaction to participants response that might not agree with my opinion. Piloting also allowed the resolution of any possible issues with completing the PROMS. The outcomes of piloting informed and refined the data collection procedures and re-shaped the proposed schedule questions. Initially, the study was to have been conducted in the UK in an NHS setting in Wales. However, due to the COVID-19 pandemic I had to transfer my study, including all the data collection, to Kuwait. This change in plan allowed me to explore CLBP patients` CS and SMS from my own culture, and this is extensively discussed in chapter 8, section 8.10 on reflection and contribution to the body of knowledge.

4.6.3.1 Piloting quantitative data in the United Kingdom

Piloting in the UK (due to the Covid-19 pandemic) was a limitation to the study given its subsequent focus in Kuwait. Four participants (students) with CLBP from Cardiff University, who met the inclusion criteria were recruited via word of mouth. Those recruited completed the PROMS and all reported that they were easy to understand and score except for the PCSQ, which took more time compared to the others. The required time to complete all PROMS was estimated to be between 20 and 30 minutes for each participant.

4.6.3.2 Piloting quantitative data in Kuwait

Three participants with CLBP completed the Arabic versions of the 5 questionnaires in Kuwait. The time taken to complete was approximately 30 minutes. All reported that the questionnaires were easy to understand and to complete.

4.7 Qualitative study

The nature of mixed methods studies means that the researcher can use one or more quantitative methods, e.g. PROMS, combined with one or more qualitative methods, e.g. single or group structured or non-structured interviews, to determine findings, enhance validity and provide a depth of understanding (Green et al. 2015). To improve reliability, Creswell and Plano (2018) argue that using the same participants in both strands enhances the quality of the data. In contrast, different participants are advised when the first strand is qualitative because the emerged themes could be used to construct a questionnaire that would be used in the second phase or vice versa (Griensven et al. 2014). In this study, the same patients were recruited in the two phases to fulfil the study`s aims. The qualitative data were used to explore patients` CS and their perceptions of SMS in the specific cultural context of Kuwait, and to explore physiotherapists’ perceptions of the patients` CS and SMS at discharge following physiotherapy. In addition, the qualitative data could help to provide provisional data for the proposal of a system to categorise patients into those who adopt mainly active CS (PAS) and those who adopt mainly passive CS (PPS).

4.7.1 Nature of qualitative questions

The qualitative questions were considered to be exploratory and open-ended. Barker et al. (2015) suggested that exploratory questions could be used if the current literature demonstrated ambiguity or where the topic was complicated. Bryman (2006) reported that between 1994 to 2003, the most widespread and popular mixed methods approach utilised in published studies were semi-structured interviews (159 studies), self-reported questionnaires (121 studies) and structured interviews (52 studies). The rationale for choosing semi-structured interviews was discussed in Chapter 3 Section 3.7. To summarise semi-structured interviews was appropriate to explore phenomena in great detail and to provide scope for unexpected conversations to arise (Patton 1990). According to Turner (2010), semi-structured interviews can explore participants' concerns, beliefs, principles, ideas and emotions about a subject, and the effectiveness of an intervention. Furthermore, they can enhance reciprocal conversations during the interview (Galletta 2012), support individual responses and enable unplanned interview questions to emerge (Rubin and Rubin 1995). Probing with unscripted follow-up questions, such as “why?” and “can you explain that to me?” could also be added.

The participants could also be motivated to explain and to describe the phenomena of interest in their own way without being constricted (Galletta 2012). Thus, this approach was seen as a suitable and was used to form a deep understanding of the research issues and to use patients` qualitative data to provide provisional data to support the proposal of a system to help categorise patients PAS and PPS. In addition, the qualitative interviews with physiotherapists aimed to gain greater insight into physiotherapists` perceptions about patients' ability to self-manage their pain and about why physiotherapists` decided to use certain SMS for people with CLBP after the physiotherapy sessions in Kuwait.

In this study, the interview schedule for CLBP patients consisted of 15 open-ended questions that aimed to provide answers to the research questions. The interview schedule was divided into three parts, i.e. questions related to LBP, advice patients had been given by their physiotherapists, and the ways that patients manage their LBP or flare-ups.

4.7.2 Piloting qualitative data

4.7.2.1 Piloting patients in the United Kingdom: English interview schedule

The same 4 participants (students) as above with CLBP involved in the quantitative pilot study completed the semi-structured interviews in a quiet room at the University. It took approximately 1 hour to cover the 15 questions. The participants provided many details regarding how they dealt with their back pain or new flare-ups following completion of their physiotherapy treatment, and what they thought about the information that was given to them by the physiotherapists. All reported that most of the questions asked were easy to understand and to answer, with two questions being unclear, i.e. Q8 and Q9. In response to this feedback, I simplified the two questions to enhance understanding. This piloting helped me to realise that academic language should not be used whilst interviewing patients with lay language being used instead. To ensure that the two questions were understandable, I interviewed all the participants again, using only the new rephrased questions and all responded to the adjusted questions clearly, without hesitation.

4.7.2.2 Piloting patients: Arabic interview schedule

The English interview schedule was translated by a trusted agent recommended by Kuwait University, Allied Health. The two bilingual physiotherapists, both PhD holders, and I, had reviewed the translation. Only a few phrases were changed into other Arabic synonyms that shared the exact academic meaning with the original English phrases. For example, SMS in Kuwait refers to ‘self-care’ and refers to a simpler phrase, which is ‘home treatment plan’ (HTP). The translation agent could not capture this phrase, and so I ensured that all SMS phrases were translated into HTP. After the cultural adaptation was concluded, the same people with CLBP were then interviewed with the Arabic scheduled questions and reported that the questions were easy to understand and answer.

4.7.2.3 Piloting physiotherapists: English interview schedule

One staff member of Cardiff University, who was experienced in treating LBP, was recruited via word-of-mouth and interviewed. The semi-structured interview consisted of 9 questions, and the interview was held in a quiet room in the University and took approximately 1 hour to respond to all the questions. The participant advised me at the beginning of the interview to explain what CS were and the difference between each coping style before going to Q6 which was about active and passive coping styles, and whether physiotherapists considered them whilst conducting patients` assessments, as the participant reported that not all physiotherapists would know what CS mean. Thus, piloting helped to recognise that physiotherapists may not know what active and passive CS meant. I responded by providing an introductory paragraph typed on a sheet of paper to each physiotherapist to read before starting the interview (Appendix 23). This paragraph included the definition of CS, the differences between active and passive CS styles, taken from the literature, and provided an outline of how CS style could impact back pain. This explanation made Q6 clearer and improved the flow of the other questions. I found it would be better to explore this topic if future participants already knew the difference between active and passive CS before going to Q6.

4.7.2.4 Piloting physiotherapists: Arabic interview schedule

The interview schedule was then translated with the same trusted agent, and two bilingual academic physiotherapists, who were PhD holders, were recruited to review the translation. The physiotherapists were not knowledgeable about CS, and highly recommended the use of the phrase HTP as an alternative to SMS.

4.7.3 Data collection: qualitative

Patients' data were collected through face-to-face semi-structured interviews at 4-8 weeks post physiotherapy. However, physiotherapists' data were gathered at any point after obtaining ethics approvals from the School of Healthcare Sciences Research Committee at Cardiff University, and the Ministry of Health of the State of Kuwait. The transcript was firstly translated from Arabic to English by the same agent, and then the data analysis was conducted.

On the day of the interview, I arrived early to ensure I was prepared. During each interview (patients and physiotherapists), I endeavoured to create a welcoming environment, and maintaining eye contact with male participants only. As per cultural norms in Kuwait, I understand that sustained eye contact with women causes discomfort. I explained the purpose of the interview and assured participants of the confidentiality of their responses, hoping to establish their trust. I tried to be an active listener, given participants full attention, and used verbal cues such as "I understand... what do you mean by, etc.." to encourage further elaboration. With patients, I acknowledged their feelings and concerns and verified their experiences with their chronicity, hoping to make them feel cared for and believed.

I endeavoured to treat the physiotherapists equally regardless of their qualifications, emphasising that the interview was not to question and judge their knowledge. I believe these actions were key in building a good interview environment.

4.7.4 Data analysis

The analysis of a semi-structured interview requires a rigorous examination of the information gathered (Webb and Kevern 2001; Silverman 2011; Creswell and Creswell 2018). Qualitative data analysis approaches are varied (Corbin et al. 2008; Silverman 2011) and consist of narrative, ethnographic, content or TA in addition to framework analysis (Corbin et al. 2008; Cooper et al. 2009; Bowling 2009; Silverman 2011).The current study analysis of qualitative data was constructed on reflexive TA. This section connects the method of analysing the semi-structured interview data to the study aims.

4.7.5 Reflexive approach

This reflexive approach identified the positions of me as a researcher within the wider socio-cultural framework, i.e. in Kuwait. Marsh and Furlong (2002) reported that an individual's beliefs and values are influenced by factors such as gender, sexuality, religious faith, social background, race, and whether one identifies as an insider or an outsider. This process is key, which may directly or indirectly inform how data was created and analysed (Braun and Clarke 2019). The theoretical aspects of reflexivity and positionality are discussed in Chapter 3, section 3.8. Reflexivity involves identifying the prenotions I bring into the study, demonstrating previous professional experiences, pre-study perceptions, and inspiration and motivation driving the researched area (Malterud 2001; Gary and Holmes 2020). Therefore, the sections below outline my values and subjective skills prior, during and following data collection, and during analytic process, that help identifying, describing and interpreting data patterns.

4.7.5.1 Prior, during and post data collection

Prior to data collection: all the piloting interviews went well with the patients and physiotherapists, and I became familiar with all the steps to be taken prior to any interview. For example, from the semi structured interview piloting, I understood that each interview should begin with an introductory talk about the aim of the study. This included how long the interview might last, the importance of gaining permission from participants for the interview to be recorded and informing the participant about their opportunity to ask any questions. These all were applied and practised during the piloting. Piloting with patients in the UK informed me that the data gathered were not sufficient to answer the listed 9 research questions. Hence, I discussed the issue with my supervisors and the interview schedule was edited, and more questions added to give 15, which covered all aspects of the study aim, and potentially reduced the risk of loss of meaning (Elo et al. 2014). One physiotherapist participated in the piloting semi-structured interviews with me in the UK. Before piloting, I assumed that only 6 questions would serve the purpose of answering the aim of this research; however, the data from this piloting helped me to realise that the 6 questions were not sufficient to establish in-depth data that addressed the aims of the study. Thus, the number of interview questions for this study was increased to 9 which were grouped into 5 categories. This approach concurs with Braun and Clarke (2006), who report that the more texts are analysed by the researcher, the deeper the understanding will be achieved by the researcher.

Although each physiotherapist was given an introductory paragraph to facilitate their understanding about the topic, we acknowledge that this could potentially influence the results. The supervisory team and I discussed this issue and decided to take this step forward as this was necessary to ensure that I will obtain in-depth results from the physiotherapists, regarding what the CS are and how they could affect the SMS, thus answering the study aim.

During data collection: following ethics approval from the Ministry of Health of the State of Kuwait, I began recruiting, motivated by the opportunity to explore my own culture; however, I was also aware of my responsibility towards potential participants. Therefore, before commencing data collection, I undertook training courses to familiarise myself with the nature of qualitative interviews and related issues and learnt how to be as neutral as possible when asking questions and responding to points raised, avoiding engaging in debate.

Building on the previous discussion on positionality in Chapter 3, Section 3.8, I positioned myself as an “insider” to the physiotherapy department where the study was conducted, considering myself as ‘one of them’, sharing the same language, nationality, religion, and Islamic culture as the physiotherapists (Savin-Baden and Major 2013; Rowe 2014; Jafar 2018). Physiotherapists are expected to be more open with a colleague they perceive as an ‘insider’, which facilitated the process of data collection and the general atmosphere (Dwyer and Buckle 2018). For example, the processes of collecting data were facilitated by the Head of the Department of Physiotherapy at Farwaniya Hospital in Kuwait who expressed her enthusiasm for a Kuwaiti physiotherapist conducting research to improve physiotherapy in Kuwait and complaining about the lack of research in back pain in Kuwait. Kindness and support from the entire staff reassured and supported me as an insider and made me feel more comfortable interviewing participants. I felt free to probe and ask more in-depth questions, thus potentially achieving more honest and rich data. Therefore, my assumptions before and during data collection were influenced by being an insider, and this influenced the process of data collection and analysis (Bryman 2016). As discussed in the Methodology chapter (Chapter 3), the subjectivity and assumptions of the researcher cannot be entirely avoided in research (Gary and Holmes 2020).

The physiotherapist interviews were scheduled at the end of their working day to avoid any interruption that may occur. However, this could act as a deterrent for some physiotherapists doing the interview as they had to stay longer after work. Where necessary I offered flexibility by allowing participants to reschedule the meeting if needed.

Notes were taken during the interview, however, I became aware that taking notes during an interview, distracted the focus of the participant, for example, they checked whether what I had written was correct or not. Thus, the approach was amended for all upcoming interviews and notes were made when the interview had finished or only during the interview where absolutely necessary. Notes were written when I made assumptions about what participants were saying, so the note was taken as a reminder to ask for further clarification and to ensure that I understood the participants` ideas. This was mainly achieved by asking a new question when the participant had finished talking. For example, some patients reported that taking medications was helpful and they could not stop using them, whilst for others it was not. Hence, I made a note to ask them what medications they used and why they could not stop them. The flexibility of TA allowed for such unplanned questions to emerge (Rubin and Rubin 1995).

After each interview I documented my judgement and emotional reaction in a reflexive journal. This included my perception of participants’ responses, the dynamic of our relationship, and how my emotions impacted the interview and my self-assessment as an interviewer. According to Braun and Clarke (2019) it is crucial to recognise and understand what opinions, beliefs and actions the researcher holds and how these might directly or indirectly inform data production and analysis. For instance, in the first physiotherapist interview, the physiotherapist mentioned that he did not take patients' preferences for treatment into account, believing himself to be the expert whose judgment superseded the patients. Although I acknowledged the importance of patient-centred care in treating CLBP, I chose not to engage in debate with him. Instead, I captured the differences of opinion in my diary. The qualitative courses I had undertaken prior to data collection equipped me with the understanding that the goal of this research was to explore perceptions rather than question them.

After completing the first 4 physiotherapists and 7 patients' interviews, I began to recognise my role as an active agent in the process of the construction of knowledge. For example, I started to see differences, similarities and patterns in the codes and feasible themes within the data from the two groups; PAS and PPS (Braun and Clarke 2006) . As the predetermined number for physiotherapists was 6, I questioned whether this number was enough to answer my research data. My supervisor and I agreed this number was sufficient given the depth of the data and the practical confines of the PhD study.

I followed all precautionary measures with respect to COVID-19, outlined by Farwaniya Hospital, including wearing personal protective equipment (PPE), and screening participants for any symptoms of COVID-19. It was not easy to wear PPE for the entire interview duration as neither the participants nor I were used to it. Although I believed participants were open with me and provided rich information, some participants could have been uncomfortable wearing PPE and may have become fatigued, which may have influenced the data. Being an Arabic speaker may have also allowed the participants, who all spoke Arabic, to share experiences with me. Most of the participants, particularly the patients, reported being pleasantly surprised and motivated to have an interview with me. While interviewing both the patients and physiotherapists, I believed they began to trust me as one of them, which may have influenced the data, encouraging more truthful responses and detailed explanations of their issues, generating richer, and deeper understanding of the culture (Gray and Holmes 2020). Simultaneously, I was able to fully comprehend their colloquial language (Gray and Holmes 2020). These are some of the advantages of being an insider researcher, as I mentioned previously in Chapter 3, Section 3.8. For example, many of the patients reported that they wanted to talk about their pain experiences and wanted a Kuwaiti researcher who was able to understand, and who listened to them carefully. However, I was also careful not to become overly-friendly and inadvertently risk violating professional boundaries, which can occur when asking personal questions, and accepting or giving gifts which can potentially lead to a compromised situation whereby participants would be confused as to my role and what they could expect from me (Baca 2011). Therefore, I strived for a balance between formal and over-involved relationships (Baca 2011).

I continually recruited patients until I reached 10 patients: 5 in each group (PAS and PPS), as it was thought this would provide sufficient depth of data for analysis. I encountered challenges in recruiting female patients, particularly those aged between 27 to 41, as some withdrew from the study and reported that their husbands did not allow them to have an interview with me due to my gender as a male researcher. Thus, recruiting male patients was much easier than recruiting females, a phenomenon linked to traditions of some conservative Kuwaiti families. In Kuwait, women who are extremely religious would not accept to be interviewed and stay in a room with a male stranger. I was aware that these scenarios could happen as I was an insider researcher whose personal biography offered me a ‘lived intimacy’ and prior knowledge of the group being studied (Merce 2007).

I encountered two different situations during the interviews that I believe are worth noting, as they shed light on the possibility of capturing CLBP patients` feelings and emotions during the interview and how to respond accordingly. For instance, the first patient, who had had a bad experience in her course of physiotherapy, asked me to provide clarification about why the physiotherapist did not provide her with a clear exercise programme and provided her with only two exercises that never changed her pain.

> *"You are a researcher in chronic back pain, do you think that only two exercises are enough for my pain? Where are the other exercises?*

> *Any exercises program? Only two exercises did not ease my pain at all. Basically, I didn't feel a difference with doing them." (PPS2, p6)*

In response, I explained that I was not in a position to make a judgement about the treatment she received because I was there as a researcher (this is despite recognising that the participant’s physiotherapist did not provide a clear exercise programme, nor delivered what I believed were the optimum exercises). I reassured her that she would be fine in time, and I informed here that I believed that she would feel the difference in the future when she adhered to her physiotherapist’s advice. I also reassured her by explaining to her in a general and extremely brief way the nature of CLBP and the best evidence found in the literature for its management. The patient sounded angry when she spoke about her physiotherapist and the treatment received, emphasising that she had no intention of engaging in SMS as long as the exercises provided failed to alleviate her pain.

The second difficult situation was when another patient cried during the interview as she was tired of being in pain, was unable to move and to cook food, and she was feeling weak compared to how she was before having CLBP. I told her how sorry I was if I had provoked her feelings, and reminded the patient that they could take a break and bring tea. The patient apologised for crying and informed me that she felt comfortable when she opened up to me, and that she felt good talking about her CLBP and the struggles she was having. I took this opportunity and gave her an extremely brief talk about the nature of CLBP. She asked if I had LBP before, and I told her that, yes, I had experienced it myself. She smiled and I believed she felt relieved, and then she said, “you cannot understand someone having LBP unless you have experienced it before”. She seemed to become aware that I really understood her situation. As mentioned previously about the advantages of being an insider researcher, I believe that my positionality as an insider physiotherapist, a Kuwaiti, an expert in treating patients with CLBP, and previously having experienced LBP, helped the research process as it allowed me to quickly build rapport and trust with my participants (Gary and Holmes 2020).

As an insider to the participants sharing the same religion, I knew about the common belief among Muslims that pain is caused by Allah, and therefore Muslims assign their suffering to Him. For instance, in the patients' results chapter, PPS(5) reported, "So I prayed to God to ease my pain." Another example was from PPS(8): "I believe that Allah, the Lord of the worlds, will help me,…when I cry and ask for forgiveness and pray at night in fear of Allah, I completely feel no pain,…In fact, this result, thanks to Allah, the Lord of the worlds, is great; it makes me feel good, makes the pain disappear, and improves my mood." According to Wan Zakaria (2015), this strong belief in Allah's will results in Muslim patients being both patient and reassured that Allah will cure them.

This doctrine enabled me to have a deeper understanding of the patients' data when they mentioned religious phrases, such as Allah and 'fate'. For example, when PPS(5) reported, "Thanks to Allah, that is my fate," I recognised that despite being in pain, she accepted her chronic pain as her fate, which was written and decided (Al-Qadar) by Allah. The Holy Qur'an explains in some verses to the believers that the aim of pain or illness is to examine themselves, and they are requested to be patient in facing their problems and to perform prayers for spiritual growth (Aflakseir and Coleman 2011). Another example was from PPS(2), who frequently prayed to Allah during rainfall, asking God why her pain did not settle. As an insider researcher, it made sense to me why she frequently prayed during rainfalls, as Muslims see rainfalls as a blessing from Allah and believe it to be a good time for supplications, which is a way for Muslims to communicate with Allah to seek personal needs, forgiveness, and help.

4.7.5.2 The analytical process

The qualitative data analysis occurred simultaneously with data collection. At the early stages of my research, it became clear that TA was the most suitable approach to use, based on theoretical decisions discussed in the Methodology chapter (Chapter 3). Furthermore, I believed that my assumptions would be influenced by participants' values and beliefs, and my relationship with them (Savin-Baden and Major 2013; Rowe 2014; Jafar 2018). As previously mentioned, I kept notes about my feelings, perceptions and assumptions in my diary book, and this quickly helped me to shape my reflexive TA.

The 6 steps or phases of reflexive thematic data analysis were flexible to the data and the research question (Braun and Clarke 2012,2020). Reflecting on the characteristics of reflexive TA from the previous chapter, reflexive TA is an iterative process, and I rarely followed a linear path through the six phases. According to

Braun and Clarke (2021a), the researcher is required to move back and forth over the phases as needed. These steps were implemented in this current study to facilitate examination of the interview transcript, generation of quotations and a reporting of the final themes that might help to answer the research questions. Prior to describing each step, numerous terms should be well-defined and discussed. Reflexive TA distinguishes between codes and themes, while other TA methods make no absolute distinction (Braun and Clarke 2021b). Code refers to a word or short phrase which offers rich information that is assigned and labelled in order to capture the data feature obtained from qualitative data that was important to the analyst (Saldaña 2016). Codes served as an analytical tool or unit utilised by me to create initial themes. It can also be conceptualised as an approach of assigning data to predefined themes (Braun and Clarke 2021b). Braun and Clarke (2012, 2021b) illustrated different types of codes: semantic or latent, inductive or deductive. Semantic codes are determined via the clear or superficial senses of the data, and do not require to be examined beyond what a participant has said (Braun and Clarke 2012, 2021b). Semantic codes can be termed a descriptive analysis of the findings, which reports the content of the data as reported by participants (Braun and Clarke 2012, 2021b). Latent codes seek to uncover hidden meanings or underlying assumptions, ideologies and notions that may form the descriptive or semantic content of the data. Analysis is much more interpretive when coding is latent, needing a more creative and active role on the part of the researcher, as codes and themes might be situated in the data, waiting to be identified (Braun and Clarke 2012, 2021b). Therefore, I can code the data semantically, latently, or both.

According to Blair (2015) and Braun and Clarke (2012, 2021b), the inductive coding (data-driven) method involves codes emerging from within the transcripts. Consequently, theory is established from the data rather than from a pre-specified theory or conceptual framework, best denoting the meaning as informed by the respondents. In contrast, deductive coding (theory-driven), involves the creation of codes by the researcher based on a pre-defined conceptual framework or codebook prior to analysis (Blair 2015). Thus, an inductive method is applied to develop theories from those areas under enquiry and to generalise theories from observations, whilst the deductive approach examines existing theories (Elliott 2018). The main concern of using the deductive coding approach noted by Creswell and Poth (2017), is that a pre-determined code restricts the analysis rather than reflecting the participants` perceptions, which is a characteristic of classical qualitative method.

It has been argued that conducting a purely deductive/inductive analysis may not be feasible. However, Braun and Clarke (2012) clarified that one approach tends to dominate over the other, with the predominance of either the deductive or inductive approach can indicate an overall orientation towards prioritising researcher/theory-based meaning or respondent/data-based meaning, respectively. Thus, this study used a predominantly inductive rather than deductive coding approach. The rationale for this choice was the lack of existing research exploring CS and SMS in the specific cultural context of Kuwait from both patients with CLBP and Physiotherapists perspectives and as such there were no existing theories to be examined. Braun and Clarke (2006) continued that pre-knowledge of the research topic could enlighten the researcher`s theoretical visions, a situation that might change the produced codes into theoretical ones.

Categorisation is the method of classifying relevant codes of similar interest within the same group (Schwandt 2014). Themes, however, have several aspects that can involve multiple categories, facets or observations that may be developed into themes (Charmaz 2006; Braun and Clarke 2021b). According to Braun and Clarke (2023), themes can be understood as two types. Firstly, summaries of topics or categories that often emerge using predefined coding. Secondly, capturing a core idea or meaning and constructing an interpretative story about it. Therefore, themes here represent interpretative stories developed around tying meaning that cannot be built prior to analysis. Themes in reflexive TA are formed around shared meaning, unified by a core concept, and researchers are recommended to think of themes as stories about their findings (Braun et al. 2014; Cassell and Bishop 2019). This second way of developing themes more accurately reflects what occurred in this study.The procedures in reflexive TA have been tailored to support the development of deep understanding and the telling of interpretative stories to obtain an interesting aspect of what a researcher is trying to understand (Braun and Clarke 2023). This approach needs depth of study, creative thinking and reflexively about the findings, extensive and organic coding to analyse various aspects of the data, enabling the researcher to move beyond superficial meanings in the data (Braun and Clarke

2023). Thus, themes are constructed and created rather than identified or discovered.

The coding process and theme development are fundamental and flexible, and usually evolve throughout the analytical process (Braun et al. 2019). This evolution facilitates further knowledge from the findings, potentially aiding in the interpretation of new patterns of meaning (Braun et al. 2019). Themes are not predetermined to identify codes in reflexive TA but emerge through the allocation and organisation of codes around a relative central commonality that can be interpreted from the data (Braun and Clarke 2019).

Reflexivity extends beyond my qualitative positionalities, as it encompasses their part as an active agent in the production of knowledge (Trainor and Bundon 2021). Therefore, I will share my values and assumptions, processes, decision-making, revealing my subjectivity and engagement in data production throughout the six phases of the reflexive TA.

Braun and Clarke (2012) note in the sixth phases of TA including the reflexive form, that the **familiarisation phase** is the first step which aims towards obtaining an understanding and deep immersion of the data. I became familiarised with the data at this phase, listening actively to each recording once prior to transcribing without taking any notes. Active listening helped me to absorb information and understand the key areas addressed in every interview before transcription. Each interview was then transcribed manually in Arabic by me immediately after the active listening. I read and revised the transcriptions of each interview and audio records several times. A translation process then was conducted for each transcript from Arabic into English by the external trusted agent. Once the translation of the text was received, I reviewed the translations whilst keeping notes of my first impressions, such as casual observation of initial data trends and possible interesting pathways, potential meanings, and patterns, and documenting my feelings and thoughts about data in the memo. An analytical memo can be utilised in the personal notes of the researcher, which reflects on the collected data and analysis, and might involve clarifications and interpretations of interview replies (Schwandt 2014).

Transcribing with extensive reading and reviewing of the texts made me familiar with the data and helped me to identify if some of scheduled questions needed to be rephrased and determining the next steps and how to handle such items as pauses and crying. These questions and considerations were discussed with the supervisor together with other details, such as the coding processes, collating codes, categories, and naming themes, to enhance the robustness of data analysis, I sent my first transcript to my supervisor, who acted as a second analyst, we then compared our codes and emerging themes.

My supervisor provided feedback and helped me in reflecting on the interview process, suggesting possible probe questions and advice for the next interview, and confirming that the interview data was relevant for the research aim. When I was about to start coding, as a novice qualitative researcher, I felt it was necessary to meet regularly with my supervisor and discuss the development of my themes and ways of developing my skills, recognising that the process of analysis is non-linear.

During the second stage, **generating the initial codes**, I moved from unstructured findings to the development of notions about the findings (Richards and Morse 2012). Braun and Clarke (2012) reported that the initial code generating stage was commenced during the process of reading the transcriptions. Initial ideas of the codes that denote the elementary part of raw data are created. I decided to code in Microsoft Word (2019) using the `comments` function button, to note codes in the side border and underline the texts appointed to each code. I created a file in my laptop; data analysis; coding; PAS, PPS group, and physiotherapists outlined each participant potential codes and noted the key findings in their story, as I believed it was key to understand each participant to capture more rich information.

I printed out all transcripts and noted key thoughts which came to my mind when reading and coding each transcript, such as the main difference between groups and potential themes. Actively engaging in this analytical process made me feel excited. Nearly 150 codes were created from the transcripts, and to maintain reflections on ideas for each code, I created memos that helped me to identify the story behind each code. The key thing from coding process is to reach sufficient depth to evaluate data patterns and diversity of positions held by respondents (Braun and Clarke 2012). I started coding the first interview, noting that some sentences provided clear and obvious meaning (semantic code), while others needed interpretation of the participant`s words (latent code). This same process was repeated with subsequent interviews and aided by discussions with my supervisor. A second round of coding focused more on my reflexive notes and positionality, enabling me to shrink my initial codes, identify further codes, and gain a better understanding of both groups of participants.

The next step of the analysis was to **search for themes,** and this was completed when all transcripts were coded. The themes were identified by their importance, relevant to the research question or by the significance of the outcomes in the theme (Nowell et al. 2017; Castleberry and Nolen 2018). Nevertheless, theme emergence was not a simple method with rules, rather, it was an adaptable process that depends on researcher judgment (Braun and Clarke 2006; Clarke and Braun 2014; Nowell et al. 2017). The process of generating themes required reducing and organising the large number of codes which was achieved by assembling all the codes into groups by combining related and similar codes that reveal the same significance (Braun and Clarke 2012). For example, I decided to create three tables divided into three columns ‘codes’ ‘subthemes’ and ‘Themes’ and each table was created in different Word document, for the physiotherapists, PAS and PPS group (Appendix 24). I pulled out all codes extracted from the transcripts under ‘codes’, deleted duplicates, and combined codes that were basically the same but worded differently. I then collated all similar codes that shared similar meaning under ‘subtheme’, moved codes around to where I saw they fitted. I reviewed each subtheme again and I realised this process could be ongoing (e.g., moving codes around, modification of code names). The researcher then should actively understand the associations among the different codes and analyze how this relationship might tell the story of a theme (Braun and Clarke 2021a). By directly engaging with the data, this helped me capture meaning of the data to tell an interpretative story about each theme.

Reviewing the themes was the fourth step of the thematic analysis during which an evaluation of the content and quality of the initial theme should be conducted (Clarke and Braun 2014). In this study, the earlier initial themes were examined for their content, and the themes and their categories were examined to consider any merging or division of themes.

Two levels of review during this stage were described by Braun and Clarke (2006). The first was at the level of the coded texts and sought to evaluate the consistency of the data extracts within the theme. This step was accomplished by reading the coded texts in each theme and examining whether the data endorsed the theme appropriately by sharing the same significance, or whether they were too varied to produce a theme. In addition, numerous coded texts were examined for their consistency and quality, and they were shifted between the codes that better represented the data.

Later, the second level assessment was conducted, at the level of themes and in relation to the whole data set (Nowell et al. 2017). Thus, the themes were examined for their links with others, as they should be coherent but different from each other (Nowell et al. 2017), and how thoroughly they offer appropriate inferences of the results with regards to the research questions (Braun and Clarke 2021a). I had developed eight themes for patients and seven themes for physiotherapists, yet I started to realise that some themes were related, and others could be merged to form one theme. After discussing this with my supervisors, and after revising the subthemes and themes, I reduced patients` themes into four, and physiotherapists into two, by amalgamating related themes together. At this point, I believed I had actively engaged with my data and reached a deep understanding of it, after revising codes, subthemes and themes, forming well-developed themes and therefore, I stopped recruiting further participants.

The following step in the thematic analysis was **defining and naming the themes**, which outlines the core of each theme whilst describing the story behind the theme (Braun and Clarke 2006). It included reading the quotations and scrutinising them in relation to the research question with the aim to shape depth via the analytic narrative (Braun et al. 2016), so by the end of this stage I was able to clearly identify what the themes were (Braun and Clarke 2006). Thus, each theme was given brief names that mirrored their meaning and story behind them. For example, there was a misleading theme ‘the biopsychosocial model of pain’; I found that the name did not truly reflect the codes and categories during this stage, and so it was renamed as the ‘the multi-dimensional nature of pain’. This reflected the patients’ experiences of pain and how pain affected them physically, socially and psychologically. In addition, this was reflected in the physiotherapists’ theme. A thorough description of each theme, and a diagram of the final themes and their categories are presented in results chapter.

The last step in the thematic analysis **is producing the report**, including clear quotations as examples, and being analytical, and is presented in the results chapter. Braun and Clarke (2006) stated that the report should be rational, coherent, consistent, non-duplicated and shaped from the story that the data tells. Therefore, I spent over 8 months ensuring that my report `PhD thesis` offered sufficient information and details of the data to shape the whole story. Themes were organised for discussion, and I used memos that were maintained during the research process for entering interactions and accordingly placing some data in context. Moreover, I captured physiotherapists and patients' non-verbal communications, which were taken as notes, which became helpful when producing the report. The story of mapping themes for both patients and physiotherapists is discussed in the results chapter. A tabulated example of a patient and physiotherapist coding along with the subthemes that formed a theme, is in Appendix 24.

4.7.5.3 Rationale of using reflexive Thematic analysis

The qualitative part of this study is reflexive, constructivist, inductive, with semantic and latent meanings. The rational for adopting reflexive TA is that I took an active part in knowledge production throughout my assumptions, such as ontological, epistemological, or where I am coming from. These are influenced by my beliefs and values which are formed by my gender, sexuality, religious faith, social standing, race, my position with respect to the study participants, such as being an insider and geographical location (Marsh and Furlong 2002). These beliefs therefore influence how the research is conducted and the findings (Rowe 2014), and this requires me to declare of my positionality in this academic work (Savin-Baden and Major 2013). The study was conducted in Kuwait, and I was aiming to provide a more thorough understanding of social interactions (Silva and Webster 2018), within Arabic culture. Rowe (2014) stated that some aspects of positionality are culturally imputed or perceived as constant, such as nationality, gender, skin-color, and race; therefore, I can demonstrate my positionality through reflexivity, such as what values, opinions, beliefs I hold regarding Kuwaiti culture, and how these might directly or indirectly influence how the data was created, analysed and interpreted.

4.7.6 Rigour and trustworthiness for the findings

This section will discuss my active role in assuring the credibility and trustworthiness of my qualitative data. This was mainly achieved by acknowledging the criteria for the gold standard for qualitative data. According to Brown et al. (2015), they reported that the criteria of credibility, transferability, dependability and confirmability as described by Lincoln and Guba (1985) were seen as the gold standard for qualitative studies. Determining rigour in mixed methods research was complex and required further consideration because of the differences between evaluating rigour in relation to quantitative and qualitative methodologies (Brown et al. 2015). Teddlie and Tashakkori (2009) described mixed methods quality as chaotic, with conflicts in the terms used and notions assessed. They reported that both quantitative or qualitative methods where used together in a study should be evaluated individually as final conclusions rely on the rigour of both (Brown et al. 2015). Thus, I evaluated the rigour of each quantitative and qualitative method separately.

Since I adopted mixed methods, dissimilarities in the paradigmatic nature of quantitative and qualitative methods led to differences in analysing their validity and reliability (Bowling 2009). For example, quantitative researchers tend to assess certain criteria, such as validity, reliability, and generalisability, whereas qualitative researchers prefer to examine the credibility and trustworthiness of data (Whittemore et al. 2001; Shenton 2004). Nowell et al. (2017) stated that every single qualitative research method had certain procedures for performing, authenticating, and assessing the data analysis processes. Lincoln and Guba (1985), state that the criteria for evaluating the quality of qualitative data could use credibility, transferability, dependability and confirmability as replacements for internal validity, external validity, reliability and objectivity, respectively. The problem of trustworthiness could be addressed with a combination of all these (Eisner 1991), which was reported by Morse et al. (2002) as being similar to rigour. Qualitative researchers could show how data analysis had been directed by recording, organising and divulging the adopted methods of analysis in sufficient detail to permit the reader to decide on its trustworthiness (Côté and Turgeon 2005; Tuckett 2005; Braun and Clarke 2006). For the qualitative phase, I became the analytical tool, made judgments concerning coding and generating themes, and recontextualising and decontextualising the data (Starks and Trinidad 2007) and it was my obligation to assure rigour and trustworthiness.

4.7.6.1 Credibility

Credibility is where the research findings can clearly demonstrate the truth of the data (Lincoln and Guba 1985). Data triangulation or ‘member checking’ is where the findings are sent back to the respondents for confirmation, thus improves the credibility of research by mitigating any subjective bias that arose from the researcher, such as misinterpretation of data (Smith and McGannon 2018). However, in reflexive TA, where the researcher`s subjectivity is acknowledged, the concept of member checking sits uncomfortably with reflexive TA (Braun and Clarke 2023).

Conversely, the notion of member reflections invite participants to provide further vision and produce further data on the analysis rather than verification or accessing truth or reality (Tracy 2010; Braun and Clarke 2023). Thus, I conducted a member reflection by sending the transcripts back to the participants. However, only physiotherapists responded, and no new data was gathered. The triangulation of data within physiotherapists helped me to examine the data from numerous perspectives, exploring gaps in understanding, acknowledging, and reflecting on differences and contradictions in understanding, and considering how to introduce these in the written report (Tracy 2010). Peer debriefing was utilised in this study as a way of enhancing credibility by regularly reviewing them with supervisors and other colleagues who were conducting qualitative studies. The aim of this collaborative and reflexive process was to check the meaning of notions or explore interpretations or assumptions of the data to generate a richer and more accurate reading of the data, rather than searching for unanimity on meaning (Braun and Clarke 2019; Braun and Clarke 2021a).

4.7.6.2 Transferability

In general, qualitative methods do not seek to be generalisable, however, the findings of qualitative research should be transferable for credibility or authenticity (Curtin and Fossey 2007). Tong and Dew (2016,p.2) defined transferability as “the extent to which the concepts and theories are relevant to other settings”. They explained that this enables researchers to compare their findings with studies conducted in different healthcare settings, populations, or areas, placing their findings in other theoretical contexts. Qualitative research articles should enable readers to decide and to evaluate the transferability from the given details, i.e. whether the findings could be utilised in other contexts (Ambroz and Bukovec 2015). Thus, I provided a detailed description of the study, including the setting, recruitment procedure (e.g., excluded 13 participants who did not fall into PAS or PPS groups), and participants' characteristics for each group. From my perspective, I would not expect this study to reflect the findings of similar studies conducted in Western countries, as this study was based on Arabic country with a different culture, religion, traditions, and customs that influence the data interpretations. This also depends on the position of the researcher, building on the previous discussion around the advantages and disadvantages of being an insider or outsider researcher (Herr and Anderson, 2005; Gary and Holmes, 2020), I would not expect a researcher from outside my country to fully understand and be able to interpret participants` gestures, informal language and the Islamic phrases used during the interview similar as I could as an insider, and in return, outsiders may interpret the data differently.

4.7.6.3 Dependability

Tong and Dew (2016) claimed that the interpretive nature of qualitative research made it impossible for another researcher to duplicate and to create identical results. They further reported that reliability was described in terms of dependability, which referred to consistency within the methodology, methods, data and results, and the transparency and auditability of the research process. Hence, in this study I relied on myself for analysing the data from the recording of each interview, and for transcribing and producing the report of the data from the reflexive TA. The report was then reviewed by the supervisor for discussion and confirmation.

4.7.6.4 Confirmability

Confirmability relates to that fact that the results and interpretations mirror the opinions and perceptions of the participants and are not unjustly subject to the researcher's preferences or personal agenda (Tong and Dew 2016). However, as stated previously, subjectivity and positionality cannot be divorced from the process of reflexive TA qualitative research. Therefore, I included multiple researchers as a ` collaborative reflexive` analysis, to obtain guidance when needed from the main supervisor, rechecking of the transcript codes and member reflections with participants (physiotherapists only).

4.8 Summary

This study used questionnaires and semi-structured interviews to perform a study with a partially mixed sequential dominant status design with 10 patients with CLBP and 6 physiotherapists. The sample size was determined by when I felt I had reached a deep understanding of the data, and the themes were sufficiently developed. Reflexive TA facilitated the development of comprehensive themes and was considered as reflexive, constructivist, inductive, semantic, with latent meanings. The study was conducted in the context of Kuwait, in the Physiotherapy Department at Farwaniya Hospital. For the CLBP patients, there were two data collection stages: (i) immediately prior to physiotherapy, i.e. a maximum of two weeks before starting the sessions, and (ii) 4-8 weeks after discharge. The quantitative phase was conducted in two sequential phases and analysed descriptively. In the first phase (quantitative phase), a proposed system to categorise patients using the PROMS; PSEQ, PCSQ and HADS, classified patients into two groups, i.e. PAS and PPS, and two additional PROMS; NPRS and SBST, were used pre and post physiotherapy. The quantitative data were used as an adjunct to provide additional colour and detail to the qualitative data.

The qualitative stage involved face-to-face interviews with the patients and were conducted in the second phase. The qualitative data helped in developing an in-depth understanding of how CS impacts SMS of patients with CLBP and how to best deliver SMS for patients from the perspectives of patients in Kuwait. The qualitative data were analysed using reflexive TA, as I declared my subjectivity and positionality and how this influenced the findings, and this could not be averted during the whole research process.

I conducted interviews with the 6 physiotherapists separately at any time during the data collection phase to understand their reasoning for the choice of SMS for people with CLBP in Kuwait. Both quantitative and qualitative data were analysed separately, and the results of the quantitative and qualitative phases for the patients were integrated in the interpretation phase. This helped to explore pain and coping in Kuwait culture from both patients` and physiotherapists` perspectives and to address this study`s aims.

Chapter 5: Patients' quantitative results

5.1 Overview

This chapter will present the patient quantitative data from the PCSQ, NPRS, SBST, PSEQ and HADS. Data analysed from the PCSQ, HADS and PSEQ were used to initiate a proposed system of classification, which sub-grouped patients into two groups, i.e. PAS and PPS. This was established as a mechanism to subgroup patients based on the primary CS to manage their pain, both prior to and post physiotherapy discharge. In addition, changes in patients' outcomes for the NPRS and SBST pre and post -discharge from physiotherapy. Therefore, patients` categorisation and descriptions added details to the qualitative data are reported. In this section, patients’ data for the PCSQ, PSEQ and HADS are tabulated to establish classification. Data on the two groups are then presented with respect to demographic characteristics and NPRS and SBST data. Descriptive analysis was used to present the data that sub-grouped patients into those who mainly adopted active coping strategies and those who mainly adopted passive coping strategies.

Table 5.1 demonstrates patient data for the PCSQ, PSEQ and HADS on which subgrouping was based. Table 5.2 interprets the data from Table 5.1 as active and passive CS from the PSEQ and HADS and shows the most frequent CS used from the active and passive CS scales from the PCSQ.

Table 5.1. Individuals' scores on the three questionnaires; Pain Self-Efficacy Questionnaire, Hospital Anxiety and Depression Scale, and Pain Coping Strategies Questionnaire.

Pt #	PSEQ score	PSEQ (Q7)	HADS	PCSQ score on each coping strategies subscale							Patient type
				RPS	DA	IBA	CSS	IPS	P and H	Catastrophising	
1	60	6	Anxiety=9, Depression=6	2.3(1.9)	5.3(1.2)	3.6(2.8)	6(1.2)	3.8(1.1)	5(2.4)	0.6(1.6)	PAS 1
3	55	6	Anxiety=4, Depression=3	0(0)	3(2.5)	2.3(1.6)	3.3(2.5)	1.8(1.4)	3.1(2.7)	0.8(1.6)	PAS 3
4	48	4	Anxiety=1, Depression=4	2.6(1.6)	3.1(2.1)	3(1.8)	5(0)	4.5(0.5)	4.6(0.5)	0.8(0.7)	PAS 4
6	47	4	Anxiety=8, Depression=2	3(2.1)	3.6(1.9)	4.3(0.8)	4.8(0.5)	3.5(1.5)	5.5(0.5)	1.1(0.9)	PAS 6
10	46	4	Anxiety=6, depression=5	4.1(1.1)	5.1(1.1)	4.1(0.9)	5.3(1)	4(0.6)	6(0)	4(1)	PAS 10
2	18	1	Anxiety=11, Depression=12	1(0.8)	2.5(1.3)	2(0)	2.1(0.8)	2(0.6)	5.8(0.4)	4.1(1.3)	PPS 2
5	15	1	Anxiety=18, Depression=16	3.1(0.9)	3.5(1.2)	3(0)	4.1(1.5)	2(1.2)	5(1.5)	2.3(2.2)	PPS 5
7	13	0	Anxiety=15, Depression=19	3.6(2.7)	4.3(1.5)	2.3(2.2)	3.0(2)	2.5(0.8)	4.5(2.5)	5(2.4)	PPS 7
8	19	3	Anxiety=13, Depression=12	1.3(0.8)	2.6(1.5)	1.8(0.9)	3(0.8)	2.1(0.9)	4.5(1.2)	3.6(1.6)	PPS 8
9	19	3	Anxiety=9, Depression=11	2.6(1.3)	3.3(1.3)	2.8(1.1)	3.3(0.8)	1.6(0.5)	4.6(1.5)	4.1(0.7)	PPS 9

Key: Pt#= Patient number, PSEQ= Pain self-efficacy questionnaire, high confidence (score >40)= expected to react well to an exercise programme, to maintain treatment, or to build on their functional benefits, PSEQ low confidence (score <40)= patients more focused on seeking pain relief at the beginning before doing activities, PSEQ (Q7)= I can cope without using medication, PSEQ, 0= not at all confident, 1-2= lower half of the scale, 3= half of the scale, 4-5= upper half of the scale, 6=completely confident.
HADS= Hospital Anxiety and Depression Scale, normal=0-7, borderline abnormal= 8-10, abnormal case=11-21.
PCSQ= Pain Coping Strategies Questionnaire, RPS= reinterpreting pain sensation, DA= diverting attention, IBA= increase behavioural activity, CSS= coping self-statement, IPS= ignoring pain sensation, P and H= praying and hoping, PAS (non-shaded lines) = patients who adopted mainly active strategies, PPS (shaded lines) = patients who adopted mainly passive strategies.

Table 5.2. Coping strategies taken from the three questionnaires; Pain Self-Efficacy Questionnaire, Pain Coping Strategies Questionnaire and Hospital Anxiety and Depression Scale

	PSEQ		HADS	Most frequent dominant coping strategies patients used from the PCSQ							
Patient number	Total score = maintaining activities, treatment, despite the pain, such as exercises.	Q7: reliance on medications	Ability to control emotional responses (anxiety and depression)	The most used CS	The 2nd most used CS	The 3rd most used CS	The 4th most used CS	The 5th most used CS	The 6th most used CS	The least used CS	Patients' type
1	Yes (60)	Never (6)	Able (9/6)	CSS	DA	P & H.	IPS	IBA	RPS	CAT	PAS 1
3	Yes (55)	Never (6)	Able (4/3)	CSS	P & H	DA	IBA	IPS	CAT	RPS	PAS 3
4	Yes (48)	Low (4)	Able (1/4)	CSS	P & H	IPS	DA	IBA	RPS	CAT	PAS 4
6	Yes (47)	Low (4)	Able (8/2)	P & H	CSS	IBA	DA	IPS	RPS	CAT	PAS 6
10	Yes (46)	Low (4)	Able (6/5)	P & H	CSS	DA	RPS	IBA	CAT	IPS	PAS 10
2	No (18)	High (1)	Unable (11/12)	P & H	CAT	DA	CSS	IPS	IBA	RPS	PPS 2
5*	No (15)	High (1)	Unable (18/16)	P & H	CSS	DA	RPS	IBA	CAT	IPS	PPS 5
7	No (13)	Always (0)	Unable (15/19)	CAT	P & H	DA	RPS	CSS	IPS	IBA	PPS 7
8	No (19)	Moderate (3)	Unable (13/12)	P & H	CAT	CSS	DA	IBA	IPS	RPS	PPS 8
9	No (19)	Moderate (3)	Able (Anxiety=9) Unable (Depression=11)	P & H	CAT	DA	CSS	IBA	RPS	IPS	PPS 9

Key: *= patient scores on pain coping strategies when using strong medication, PSEQ= Pain Self-Efficacy Questionnaire, Q7= from the Pain Self-Efficacy Questionnaire (I can cope with my pain without medication), HADS= Hospital Anxiety and Depression Scale, self-efficacy; 0= not at all confident, 1-2= lower half of the scale, 3= half of the scale,4-5= upper half of the scale, 6=completely confident, PCSQ= the Pain Coping Strategies Questionnaire, CS= coping response strategies, RPS= reinterpreting pain sensation, DA= diverting attention, IBA= increase behavioural activity, CSS= coping self-statement, IPS= ignoring pain sensation, P&H= praying and hoping, CAT=catastrophising, shaded box= passive strategies.

Table 5.2 shows CS taken from the three questionnaires: PSEQ, PCSQ and HADS. Patients were classified into PAS when they used more active CS than passive CS and were classified into PPS when they used more passive CS. For example, patient (1) scores high in total score of PSEQ (60/60), which indicates the patient has higher self-efficacy and self-confidence, and may be able to maintain activities and treatment, despite the pain, such as exercises. Patient (1) also scores (6/6) on question number (7) from PSEQ, which means the patient never relies on medication to relieve the pain. For the HADS, patient (1) scores (9/21) on the anxiety scale; normal anxiety, and (6/21) on the depression scale; normal depression, which indicates the patient has normal anxiety and depression based upon his scores. From the PCSQ, the most frequently used CS patient (1) reports to cope with the pain is CSS, the second most is DA, third is P and H , then IPS, after that IBA, the sixth most used RPS, and the least used CAT. It can be proposed that these results may indicate that patient (1) used mainly active CS to deal with his pain and accordingly was allocated into the PAS group.

However, patient (2) scores low in the total score of PSEQ (18/60), which indicates the patient has low self-efficacy and self-confidence and is more focused on seeking pain relief at the beginning before doing activities. Patient (2) also scores (1/6) on question number (7) from PSEQ, which indicates that the patient relies highly on medication to relieve the pain. From the HADS, patient (2) scores (11/21) on the anxiety scale, and (12/21) on the depression scale, which indicates the patient has anxiety and depression based upon his scores. From the PCSQ, the most frequently used CS patient (2) reports to cope with the pain are P&H, the second most is CAT, the third most is DA, then CSS, after that IPS, the sixth most used IPA, and the least used RPS. It can be proposed that these results may indicate that patient (2) used mainly passive CS to deal with his pain and accordingly was allocated into the PPS group.

The two patients noted above have different pain levels before and after physiotherapy treatments, which could indicate differences in their clinical conditions rather than differences in CS. For instance, on VAS scale, patient (1) scores: (2/10) pre- and (3/10) post- sessions, whereas patient (2) scores: (7/10) pre- and post-sessions.

5.2 Demographic characteristics

Table 5.3 outlines the demographic characteristics for all patients, including age, gender, marital status, highest education level patients obtained, working pattern, employment status, time off work pre- and post-physiotherapy sessions, number of physiotherapy sessions patients completed, race, and the number of LBP episodes patients experienced after physiotherapy discharge.

Table 5.3. Demographic characteristics for patients who adopted mainly active strategies and the patients who adopted mainly passive strategies.

	Patients who adopted mainly active strategies (n=5)	**Patients who adopted mainly passive strategies (n=5)**
	n	**n**
Age (years):		
25-34	2	1
35-44	2	1
45-54	0	1
55-64	1	1
65-74	0	1
Gender		
Male	3	3
Female	2	2
Marital status		
Single	2	0
Married	3	5
Highest education level achieved		
High school	0	1
College	3	2
Trade/Technical/Vocational training	2	2
Working pattern		
Full time	3	3
Part time	1	0
Ad hoc work	1	2
Employment status		
Employed	2	3
Self-employed	1	0
Out of work and not currently looking for work	1	0
Homemaker	0	1
Retired	1	1
Total time off work due to LBP (prior to physiotherapy sessions)		
No time off work	1	1
1 week	1	0
2 weeks	0	1
3 weeks	1	1
4 weeks or more	1	1

NA	1	1
Total time off work due to LBP (following completion of physiotherapy sessions)		
No time off work	2	3
4 weeks or more	2	1
NA	1	1
Number completed physiotherapy sessions.		
1-3	0	2
4-7	1	1
8-11	2	0
More than 11	2	2
LBP episode (post-physiotherapy sessions)		
2-4	1	1
5-7	1	1
More than 10	3	3

Key: n= frequency, LBP= low back pain

From Table 5.3 it appears that the two groups were well-matched for all characteristics. The two groups were almost identical in terms of highest educational level achieved and their working pattern; however, one patient from the PPS group had a low qualification level compared to all patients from the two groups who achieved a post-high school degree. The two groups were also identical regarding the total time off work due to CLBP prior to physiotherapy sessions; no time off work increased following physiotherapy sessions between the two groups. There is minimal difference in the number of physiotherapy sessions completed by the two groups, with two patients from each group completing more than 11 sessions. According to the patients` LBP episodes following treatment, both groups were identical in the frequency of episodes of LBP.

Table 5.4. Demographic characteristics (mean (standard deviation), median and range) for the two groups, i.e. patients who adopted mainly active strategies and patients who adopted mainly passive strategies.

	Patients who adopted mainly active strategies (n=5)			Patients who adopted mainly passive strategies (n=5)		
	Mean (SD)	**Median**	**Range**	**Mean (SD)**	**Median**	**Range**
Age (years)	40 (11.2)	39	28	48.6 (12.8)	48	32
Weight (kg)	74.6 (12.3)	81	27	74.6 (16.9)	83	42
Height (cm)	171.2 (8.8)	172	22	167.4 (22.6)	170	51
Body mass index (kg/m^2)	25.3 (2.7)	25.6	7.1	26.8 (5.9)	25.2	15.3

Key: kg= kilogram, cm=centimetre, m= metre, SD= standard deviation.

Table 5.4 outlines the age, weight, height, and body mass index (BMI) for the two groups. The PAS group was slightly younger than the PPS group, however both groups were comparable for weight, height, and BMI.

5.3 Patient reported outcome measures.

5.3.1 Normality testing

The Shapiro-Wilk test tested the normality of the PROMS data. (Appendix 25). The data for PCSQ (p=0.536), anxiety (p=0.684) and depression (p=0.143) subscales of the HADS all demonstrated normal distribution; hence, mean and standard deviations were used to describe the data. In contrast, the SBST total score (p=0.014) and risk score (p=0.00), NPRS score (p=0.042), self-efficacy score (p=0.009) and levels of confidence (p=0.00) were not normally distributed. Thus, median and range were used to describe these data. Individuals' scores across the five PROMSS are outlined in Table A (Appendix 26). Table 5.5 reports the descriptive data of the two groups' scores on the NPRS, PSEQ, HADS and SBST, pre- and post-physiotherapy sessions.

Table 5.5. Numerical Pain Rating Scale, Pain Self-Efficacy Questionnaire, STarT Back screening tool, and the Hospital Anxiety and Depression Scale scores, pre- and post-physiotherapy sessions for patients who adopted mainly active strategies and patients who adopted mainly passive strategies groups.

		Patients who adopted mainly active strategies group (n=5)		**Patients who adopted mainly passive strategies group (n=5)**	
Patient reported outcome measures	**Descriptive tests**	**Pre-PT sessions**	**Post-PT sessions**	**Pre-PT sessions**	**Post-PT sessions**
NPRS	Median (Range)	6 (5)	2 (2)	7 (3)	7 (5)
HADS (Anxiety score)	Mean (SD)`	5.6 (3.2)	5 (3.7)	13.2 (3.4)	11.4 (4.1)
HADS (Depression score)	Mean (SD)`	4 (1.5)	5.4 (2)	14 (3.3)	10 (4.3)
PSEQ	Median (Range)	48 (14)	52 (14)	18 (6)	24 (33)
SBST	Median (Range)	3 (3)	2 (1)	7 (3)	7 (5)

Key: PT= physiotherapy, SBST=STarT Back Screening Tool, PSEQ= Pain Self-Efficacy Questionnaire, NPRS= Numeric Pain Rating Scale, SD= Standard deviation.

5.3.2 Numerical Pain Rating Scale

Table 5.5 shows that the PPS group reported slightly higher pain intensity on the NPRS compared to the PAS group prior to the physiotherapy sessions. The PAS group demonstrated a reduction in pain intensity, unlike the PPS group, who reported similar pain intensity post-physiotherapy sessions. Patient 9 (PPS) demonstrated the greatest reduction in pain at post-physiotherapy sessions (Table A, Appendix 26).

5.3.3 Hospital Anxiety and Depression Scale

Table 5.5 shows differences in anxiety and depression between the two groups reported in the HADS questionnaire. The mean anxiety scores for the PPS group were higher during pre-and post-physiotherapy sessions compared to the PAS group, with both groups demonstrating a slight reduction in anxiety levels post-physiotherapy sessions. The mean scores for the depression subscales were higher for the PPS group both pre- and post-physiotherapy sessions compared to the PAS group. Thus, overall, the PPS group reported higher levels of anxiety and depression pre- and post-physiotherapy compared to the PAS group.

Table 5.6. Anxiety and depression scores for patients who adopted mainly active strategies and patients who adopted mainly passive strategies group, pre-and post-physiotherapy sessions.

	Patients who adopted mainly active strategies group (n=5)				**Patients who adopted mainly passive strategies group (n=5)**			
	Anxiety level pre-PT sessions	Anxiety level post-PT sessions	Depression level pre-PT sessions	Depression level post-PT sessions	Anxiety Level pre-PT sessions	Anxiety Level post-PT sessions	Depression level pre-PT sessions	Depression level post-PT sessions
Normal	3	4	5	4	0	1	0	1
Borderline abnormal	2	0	0	1	1	1	0	1
Abnormal	0	1	0	0	4	3	5	3

Key: normal =0-7, borderline abnormal= 8-10, abnormal=11-21, PT=physiotherapy.

The grouped anxiety and depression scores for the HADS, i.e. normal, borderline abnormal and abnormal, pre- and post-physiotherapy sessions are shown in Table 5.6

From Table 5.6, prior to treatment, in the PAS group, three patients were classified as having a normal anxiety level, and two were classified as having a borderline abnormal level of anxiety. Post treatment, four patients from the PAS group were classified as having a normal level of anxiety; however, one patient was classified as having an abnormal level of anxiety. Table A (Appendix 26) reveals that the two patients who moved from borderline abnormal were PAS (1), who moved to the next classification level, i.e. abnormal anxiety, and PAS (6) who moved to a normal anxiety level. Regarding depression, only PAS (1) had an increase in depression score post-treatment and became classified as having borderline abnormal depression level from borderline normal.

In Table 5.6, four patients in the PPS group reported an abnormal level of anxiety and one was borderline abnormal level of anxiety pre-physiotherapy sessions. Post-treatment, three PPS patients had unchanged scores, remaining as having abnormal levels of anxiety, one remained borderline abnormal, and one improved to a normal anxiety level. Patients in the PPS group were all categorised as having abnormal depression levels pre-physiotherapy sessions, however, post-physiotherapy sessions, two patients from the PPS group improved. Table A (Appendix 26) shows that PPS (5) moved from abnormal anxiety level at pre-physiotherapy to having borderline abnormal level, and PPS (9) moved from having a borderline abnormal anxiety level pre-physiotherapy to become classified as having a normal anxiety level post-physiotherapy session. Patient PPS (9) was identified as having a normal depression level and PPS (8) had a borderline abnormal depression level.

5.3.4 Pain Self-Efficacy Questionnaire

Each item in the PSEQ asks the responder to indicate how confident they believed they were or felt to be able to execute activities and exercises despite the pain. Table 5.5 above shows that the PAS group scored higher on the PSEQ pre-physiotherapy compared to the PPS group, indicating that the PAS group had higher confidence levels to perform activities and exercises despite the pain. Median scores for the self-efficacy increased in the PAS group post-physiotherapy sessions indicating that they were maintaining their level of confidence. Similar to the PAS group, an increase in self-efficacy scores post-physiotherapy sessions were seen in the PPS group; however, the lower baseline score of self-efficacy remained, i.e. having less confidence to exert activities and exercises despite the pain. Table A (Appendix 26) shows that all patients from the PPS were classified as having a low level of self-efficacy pre-physiotherapy sessions. PPS (9) was the only patient from the PPS group who reported an increase in self-efficacy score post-physiotherapy sessions, from 19 to 52, and was therefore classified as having a high level of self-efficacy (Table A, Appendix 26).

The literature reports that it is important to understand peoples' confidence in coping with their pain without medications and that depending on medication is considered to be a passive CS that could lead to more pain disability. Q7 from the PSEQ, i.e. 'I can cope with my pain without medication' may provide a good insight into their level of confidence (Table 5.7). All the other nine questions can be seen in Appendix 27.

Table 5.7. Question (7) from Pain Self-Efficacy Questionnaire: "I can cope with my pain without medication".

Patients who adopted mainly active strategies group (n=5)			Patients who adopted mainly passive strategies group (n=5)		
Patient number	Pre-PT sessions	Post-PT sessions	Patient number	Pre-PT sessions	Post-PT sessions
PAS 1	6	5	PPS 2	1	2
PAS 3	6	6	PPS 5	1	0
PAS 4	4	2	PPS 7	0	2
PAS 6	4	5	PPS 8	3	1
PAS10	4	4	PPS 9	3	5

Key: PT= physiotherapy, 0= not at all confident, 1-2= lower half of the scale, 3= half of the scale, 4-5= upper half of the scale, 6= completely confident, PAS= patients who adopted mainly active strategies, PAS= patients who adopted mainly passive strategies.

Table 5.7 demonstrates, from question 7 of the PSEQ, that the PAS group reported feeling confident with managing their pain without using medication pre-physiotherapy sessions, with two out of five scoring 6 (completely confident), and three scoring 4 (upper half of the scale). Interestingly, one patient, PAS (4), had a level of confidence reduced by half post-physiotherapy sessions. Conversely, pre-physiotherapy, the level of confidence in coping with pain without medication was lower in the PPS group compared to the PAS group, with one patient scoring 0 (not at all confident), two scoring 1 (lower half of the scale) and two scoring 3 (half of the scale). Mixed results can be seen in the PPS group scores post-physiotherapy sessions for Q7, with three demonstrating increased confidence scores, with two reporting reduced scores. One patient, PPS (9), was the only individual whose level of confidence increased and who achieved a high level of confidence to cope with pain without using medication.

Overall, each patient from the PAS group showed a higher confidence level to cope with pain without using medication pre- and post-physiotherapy sessions compared to each patient from the PPS group. Exceptions to this were PAS (4), who showed a low level of confidence to cope with pain without medication post-physiotherapy sessions, and PPS (9), who achieved a high confidence level to cope with pain without using medications post-physiotherapy.

5.3.5 STarT-Back screening tool

The results from the SBST for both groups pre- and post-physiotherapy sessions are presented in Table 5.8.

Table 5.8. Categorised STarT Back screening tool scores (low, medium and high risk of persistent LBP) between the two groups (patients who adopted mainly active strategies and patients who adopted mainly passive strategies).

STarT Back screening tool		Risk level for having persistent low back pain		
		Low (n)	Medium (n)	High (n)
PAS group	Pre-PT sessions	4	1	0
	Post-PT sessions	5	0	0
PPS group	Pre-PT sessions	0	2	3
	Post-PT sessions	1	0	4

Key: n= frequency, PAS= patients who adopted mainly active strategies, PPS= patients who adopted mainly passive strategies, PT= physiotherapy, low risk= 3 or less of total score, medium risk= 4 or more in total score (3 or less in sub score), high risk= 4 or more in total score (4 or more in subscore).

Table 5.8 shows that most of the PAS group (n=4) were defined as being at low risk of developing persistent LBP pre-physiotherapy sessions, and one PAS individual was defined as medium-risk which improved to low-risk post-physiotherapy sessions. All the PAS group were classified as having a low risk of developing persistent LBP post-physiotherapy sessions. For the PPS group, however, two patients were classified as medium risk and the remaining three as high risk of developing persistent LBP prior to physiotherapy sessions. Post-physiotherapy sessions, only one patient from the PPS group showed an improvement to become classified as low risk; however, the remaining four patients were identified as having a high risk of developing persistent LBP. Overall, from these results, post-physiotherapy sessions, all the PAS group were deemed to be less likely to develop persistent LBP, whilst the PPS group were possibly more likely to develop persistent LBP.

Table A (Appendix 26) shows that PAS (4) was classified as medium risk pre-physiotherapy, and changed to become classified as low risk, post-physiotherapy sessions. PPS (2) and PPS (9) were classified as at medium risk of having persistent LBP pre-physiotherapy sessions. At post-physiotherapy sessions, PPS (2) became classified as ‘high risk, whereas PPS (9) improved and became classified as low risk.

5.3.6 Pain Coping Strategies Questionnaire

The PCSQ revealed the cognitive and behavioural CS that patients exhibit and provides an overview of their ability to decrease and to control their pain pre- and post-physiotherapy sessions. Patients' and the two groups' scores on the active and the passive CS scales from the PCSQ, pre- and post-physiotherapy sessions are presented in Tables 5.9 and 5.10 respectively.

Table 5.9. Comparison between patients pre- and post-physiotherapy sessions. Mean and standard deviations for each active subscale of the Pain Coping Strategies Questionnaire.

	Reinterpreting pain sensation		**Diverting attention**		**Increase behavioural activity**		**Coping self-statement**		**Ignoring pain sensation**	
Patient type Pre-PT	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**
PAS(1)	2.3(1.9)	3.6(2.1)	5.3(1.2)	5.6(0.5)	3.6(2.8)	5(1.2)	6(1.2)	5.1(0.4)	3.8(1.1)	4.6(1)
PAS(3)	0(0)	0(0)	3(2.5)	2(3)	2.3(1.6)	4.1(2.3)	3.3(2.5)	2.3(2.9)	1.8(1.4)	3(1.8)
PAS(4)	2.6(1.6)	3.1(1.4)	3.1(2.1)	3.8(1.8)	3(1.8)	4.5(1.2)	5(0)	5.1(0.4)	4.5(0.5)	5.1(1.1)
PAS(6)	3(2.1)	3.1(0.9)	3.6(1.9)	3.3(1.6)	4.3(0.8)	4.1(0.4)	4.8(0.5)	4.1(0.4)	3.5(1.5)	3.1(1.3)
PAS(10)	4.1(1.1)	3.3(1.8)	5.1(1.1)	4.1(1.8)	4.1(0.9)	5.1(0.4)	5.3(1)	5.5(0.5)	4(0.6)	4.6(0.5)
PPS(2)	1(0.8)	1.8(1.3)	2.5(1.3)	2.6(1.5)	2(0)	1.8(0.9)	2.1(0.8)	1.8(0.7)	2(0.6)	1.6(0.5)
PPS(5)*	3.1(0.9)	2.8(2.4)	3.5(1.2)	3.8(1.4)	3(0)	4(1.2)	4.1(1.5)	5.3(0.5)	2(1.2)	3.8(2.2)
PPS(7)	3.6(2.7)	2.5(2.5)	4.3(1.5)	0.3(0.5)	2.3(2.2)	1(2)	3.0(2)	1.0(0.6)	2.5(0.8)	1.3(2.4)
PPS(8)	1.3(0.8)	2.3(1)	2.6(1.5)	2.5(1.8)	1.8(0.9)	1.8(0.7)	3(0.8)	2.8(0.4)	2.1(0.9)	2.1(0.7)
PPS(9)	2.6(1.3)	2.8(0.4)	3.3(1.3)	4(1.5)	2.8(1.1)	3.3(0.8)	3.3(0.8)	4.1(0.7)	1.6(0.5)	3.5(1.2)

Key: *= Patient reported score with strong medication, PAS (non-shaded lines) = patients who adopted mainly active strategies, PPS (shaded lines) = patients who adopted mainly passive strategies, PT= physiotherapy, pre= pre-physiotherapy sessions, post= post-physiotherapy sessions, (#)= patient ID number.

Table 5.9 shows the mean and standard deviation scores for each patient on each of the five active subscales of the PCSQ pre- and post-physiotherapy sessions, where the most and least frequent active CS used is different between patients pre- and post-treatment.

Table 5.10. Comparison between each patient pre- and post-physiotherapy sessions. Mean and standard deviations for each passive subscale and extra two questions of the Pain Coping Strategies Questionnaire.

	Praying and hoping		Catastrophising		Ability to decrease the pain		Control over the pain	
Patient type pre-PT	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**
PAS(1)	5(2.4)	5.6(0.8)	0.6(1.6)	2.3(2.7)	6	5	4	6
PAS(3)	3.1(2.7)	2.3(2.5)	0.8(1.6)	0.6(0.8)	6	4	3	4
PAS(4)	4.6(0.5)	5.5(1.2)	0.8(0.7)	1.3(0.5)	5	5	3	5
PAS(6)	5.5(0.5)	5.6(0.5)	1.1(0.9)	1.8(1.3)	4	5	4	4
PAS(10)	6(0)	5.3(1.2)	4(1)	2.1(1.8)	4	5	5	5
PPS(2)	5.8(0.4)	5.8(0.4)	4.1(1.3)	4.3(1)	2	1	0	1
PPS(5)*	5(1.5)	5.5(1.2)	2.3(2.2)	2.6(1.6)	3	4	3	6
PPS(7)	4.5(2.5)	5.1(1.6)	5(2.4)	4.6(1.3)	1	0	1	0
PPS(8)	4.5(1.2)	5.3(0.8)	3.6(1.6)	3.6(1.8)	2	2	3	3
PPS(9)	4.6(1.5)	2.8(1.1)	4.1(0.7)	2(0.6)	3	4	2	4

Key: PAS (non-shaded lines) = patients who adopted mainly active strategies, PPS (shaded lines) = patients who adopted mainly passive strategies, pre= pre-physiotherapy sessions, post= post-physiotherapy sessions, *= patient reported score with medication, PT= physiotherapy.

Table 5.10 shows the mean and standard deviation scores for each patient on each of the two passive subscales and the extra two questions of the PCSQ pre- and post-physiotherapy sessions. It can be noticed that the mean and standard deviation scores on the “praying and hoping” subscale at pre-physiotherapy sessions are above 3 for all patients, and most of the patients` scores remained almost the same post-physiotherapy sessions, except for PPS (9), who had a reduction from (pre-4.6 to post-2.8) physiotherapy sessions. For the “catastrophising” subscale, half of patients scored above 3, except for PAS (6) and PPS (5); (1.1, 2.3) respectively. A comparison between the two groups for each subscale will be presented in Table 5.11 below.

Table 5.11. A comparison between the two groups, i.e. patients who adopted mainly active strategies and patients who adopted mainly passive strategies. Mean and standard deviation for each active subscale score of the Pain Coping Strategies Questionnaire.

Group type	Reinterpreting pain sensation		Diverting attention		Increase behavioural activity		Coping self-statement		Ignoring pain sensation	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
PAS group	2.4(1.5)	2.6(1.5)	4(1.1)	3.8(1.3)	3.5(0.8)	4.6(0.4)	4.9(0.9)	4.4(1.2)	3.5(1)	4.1(0.9)
PPS group	2.3(1.1)	2.4(0.4)	3.2(0.7)	2.6(1.4)	2.4(0.5)	2.4(1.2)	3.1(0.7)	3(1.7)	2(0.3)	2.5(1.1)

Key: PAS (non-shaded row) = patients who adopted mainly active strategies, PPS (shaded row)= patients who adopted mainly passive strategies, pre= pre-physiotherapy sessions, post= post-physiotherapy sessions.

Table 5.12. A comparison between the two groups, i.e. patients who adopted mainly active strategies and patients who adopted mainly passive strategies. Mean and standard deviation for each passive subscale scores and extra two questions of the Pain Coping Strategies Questionnaire.

Group Type	Praying and hoping		Catastrophising		Ability to decrease the pain		Control over the pain	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
PAS group	4.8(1)	4.9(1)	1.5(1.4)	1.6(0.6)	3.8(0.8)	4.8(0.8)	5(1)	4.8(0.4)
PPS group	4.9(0.5)	4.9(1.2)	3.8(0.9)	3.4(1.1)	1.8(1.3)	2.8(2.3)	2.2(0.8)	2.2(1.7)

Key: PAS (non-shaded row) = patients who adopted mainly active strategies, PPS (shaded row)= patients who adopted mainly passive strategies, pre= pre-physiotherapy sessions, post= post-physiotherapy sessions.

Tables 5.11 and 5.12 show the subscales of the PCSQ; seven CS (five active and two passive CS subscales) in addition to the two questions regarding the patients` ‘ability to decrease the pain’ and ‘control over the pain’ the two groups used pre- and post-physiotherapy sessions. Table 5.11 shows the mean scores prior to the physiotherapy sessions for the PAS group to be higher in four active CS subscales, i.e. ‘diverting attention’, ‘coping self-statement’, ‘increase behavioural activity’ and ‘ignoring pain sensation’ strategies compared to the PPS group. The two groups scored equally in one active CS, i.e. `reinterpreting pain sensations`.

Table 5.12 shows that the patients in both groups used ‘praying and hoping’ as passive CS frequently and equally and they had similar mean scores in pre-physiotherapy sessions, and their scores remained unchanged at post-physiotherapy. Regarding the passive CS ‘catastrophising’ subscale, the PAS group had lower mean scores than the PPS group pre-physiotherapy sessions and post-physiotherapy sessions. The most frequent CS used by the PAS group was ‘coping self-statement’, followed by ‘praying and hoping’, and ‘diverting attention’. It was found that the PAS group equally used ‘ignoring pain sensation’ and ‘increase behavioural activity’, then ‘reinterpretation pain sensation’. The least used active CS was ‘catastrophising’. However, the PPS group used ‘praying and hoping’ as the most common CS, followed by ‘catastrophising’, ‘diverting attention’, ‘coping self-statement’, ‘increase behavioural activity’, ‘reinterpretation pain sensation’. The strategy least utilised by the PPS group was ‘ignoring pain sensation’.

Table 5.12 shows that the PAS group had higher mean scores compared to the PPS group for the questions ‘ability to decrease the pain’, and ‘control over the pain’ pre-physiotherapy sessions. This demonstrated that the PAS group showed a higher ability to control their pain and to have control over their pain than the PPS group. The PAS group’s ability to decrease the pain increased post-physiotherapy sessions, whereas their scores in their ability to have control over the pain remained almost the same. In addition, the mean score for the PPS group’s ability to have control over the pain remained the same. The ability to decrease the pain was slightly increased post-physiotherapy sessions as shown in Table 5.13. However, they were still reporting lower values compared to the PAS group.

5.4 Summary

Patients` results for the PCSQ, NPRS, SBST, PSEQ and HADS were used to observe changes post-physiotherapy sessions. Three of the PROMS, i.e. the PCSQ, PSEQ and HADS were analysed and used to initiate a proposed system of classification, e.g. into two groups, i.e. PAS and PPS. Furthermore, they were used to add more details to the qualitative data of the study. The two groups were balanced at baseline, yet the PPS group had fewer physiotherapy treatment sessions compared to the PAS group. The PAS group demonstrated lower pain intensity, lower anxiety and depression levels than the PPS group pre- and post-physiotherapy sessions. The PAS group showed higher confidence levels to maintain activities and exercises, and greater confidence to cope with pain without using medications compared to the PPS group pre- and post-physiotherapy. The SBST showed that the PAS group were considered to be less likely to develop persistent LBP, whilst the PPS group were possibly more likely to develop persistent LBP even following physiotherapy. The most dominantly used CS the PAS group adopted from the PCSQ were active CS; this was more than the PPS group pre- and post-physiotherapy sessions. Regarding the two passive CS, the two groups were using ‘praying and hoping’ frequently and equally, whereas ‘catastrophising’ was the second most CS commonly used by the PPS group and the least CS utilised by the PAS group. The PAS group further demonstrated a higher ability to decrease their pain and to control their pain more than the PPS group pre- and post-physiotherapy sessions.

Patient (9) pre-physiotherapy demonstrated using more passive compared to active CS, including reporting low self-efficacy (PSEQ), and a moderate ability to cope with CLBP without medication (Q7 PSEQ), was classified as a borderline abnormal anxiety level and abnormal depression levels (HADS). Thus, the patient was classified as PPS prior to the treatment. Patient (9) also demonstrated high pain score on the NPRS and was identified as at medium risk of having persistent LBP (SBST). Post-physiotherapy sessions, this was the only individual who moved classifications to PAS, reporting high self-efficacy (PSEQ), and classified as having normal anxiety and depression levels (HADS). Furthermore, PPS (9) reported a low pain score (NPRS) and a low risk of having persistent CLBP (SBST).

Chapter 6: Patients` qualitative results

6.1 Qualitative patient data

Ten patients with CLBP, (6 males and 4 females), took part in a semi-structured interview to attain an in-depth exploration of their CS responses and SMS in relation to their back pain. Recruitment was terminated at ten patients, the point at which I felt I had reached a deeper understanding of the data and themes were sufficiently developed to foster insight. Amongst the male patients, there were three Egyptian patients, two Kuwaitis and one Iraqi. All non-Kuwaiti patients had been living in Kuwait for more than 25 years. All four females were Kuwaitis. Patients were grouped into PAS and PPS according to their scoring in the PSEQ, HADS and PCSQ. Each group consisted of five patients with three males and two females in each.

6.2 Introduction to the main themes

A deep and varied picture of CLBP patients and their CS to SMS were obtained through an in-depth analysis of the semi-structured interview. Key themes and subthemes were developed and mapped (Figure 7), using reflexive TA and these themes revealed and enhanced my understanding of how patients` CS impact their SMS. The four main themes that emerged were ‘the multidimensional nature of pain’, ‘patients` coping response strategies’, ‘patients` perception as recipients of healthcare education’ and `factors influencing patients` adherence to home treatment exercises plan’.

My positionality as an insider researcher enabled me to comprehend various forms of language (e.g. Islamic phrases), encompassing colloquial expressions and non-verbal cues which facilitated a deeper understanding of the data. The data suggested that pain impacted on the patients in different ways and thus they appeared to cope differently, i.e. as PAS and PPS (Figure 7). Regardless of their coping styles and perspectives, all patients had been educated by their physiotherapists about SMS to deal with their pain, and a common strategy was a HTE. Although the patients received education from their healthcare professionals about how to self-manage the pain at home, the data showed that numerous factors influenced the patients or hindered their adherence to an HTE, which led to either success or failure.

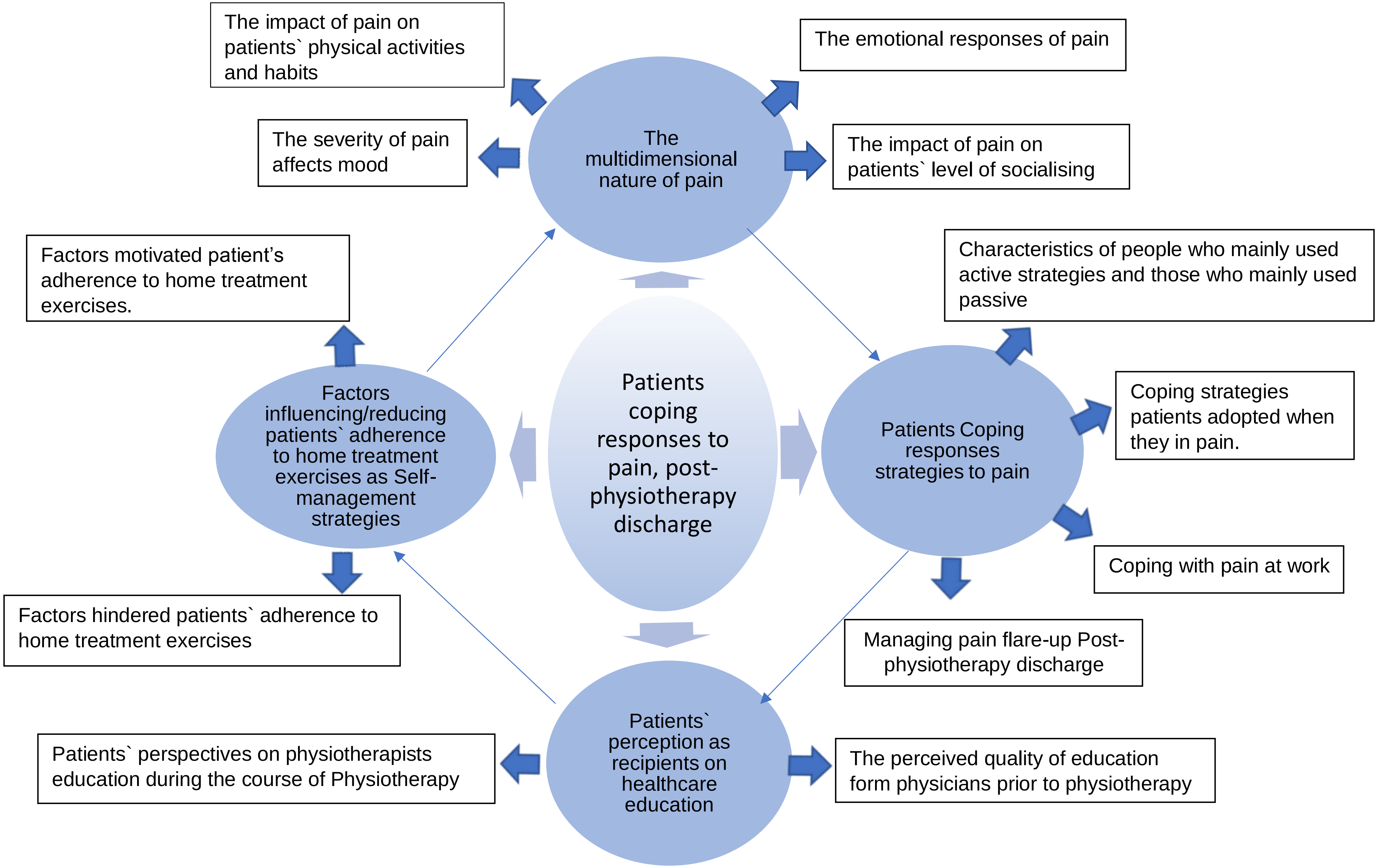


Figure 7. The four themes (blue circle) which emerged from the interview data.

6.2.1 Theme (1): The multidimensional nature of the pain

This theme enables an understanding of the multidimensional nature of pain and how pain influenced patients’ CS. The term 'dimensional nature of pain' indicates that the pain has multiple dimensions of impact; these include emotions, physical sensation, social interaction and support, as reported from the data. This theme is comprised of four subthemes, i.e. `the severity of pain affects mood`, the psychological effect of pain`, `the impact of pain on physical activities and habits` and `the impact of pain on patients’ level of socialising`.

6.2.1.1 Sub-theme 1: Severity of pain affects mood

Pain affected mood in all the patients with CLBP. For the PAS patients, the more severe or intense the pain they experienced, the more irritable they became and vice versa. For example, one patient stated that it was annoying when the intensity of pain was severe, but she currently had mild pain and coped with it.

> *"previously if the pain becomes so severe it irritates me and makes me irritable because there is something annoying me. But now it is fine, and I coped with pain. It becomes mild. Currently, I rarely get angry or lose my temper" (PAS4, p5)*

PAS (6) reported that his mood was affected not because of the pain, but when he failed to self-manage the pain. This caused stress that changed his mood, but he resolved the stress quickly by using active CS, such as walking. The impact of pain appeared wider in the PPS group than the PAS, as they were impacted by both moderate and severe pain. For example, one patient reported that her psyche and mood worsened day after day, as she cried during the interview because she was tired from feeling pain every day. However, as being an insider, I recognised that she accepted being in chronic pain as her fate was written and decided “Al-Qadar” by Allah.

> *" my psyche was affected, If I cried, this is predicted and normal because I am tired of feeling back pain,… if I cried in front of you because you are a specialist and because I suffer from a disability thanks to Allah, that is my fate. (PPS5, p2)*

Reliance on spiritual CS, such as praying and hoping to God reported by patients will be presented in theme 2.

The PAS group appeared to experience negative changes in mood only when the pain became severe. For instance, two patients indicated that mild pain had no effect on their emotional status, and one reported mild to moderate pain had no effect as well. Two patients reported that the extreme intensity of pain contributed to changing their mood and affected their psyche. However, being in a bad mood did not prevent them from doing what they chose to do. However, PAS (10) added that being in a bad mood because of severe pain could stress him and made him short-tempered.

Similarly, the data from the PPS group showed that the effect of pain seemed to rely on the severity of pain and that there was no psychological effect resulting from mild pain, as reported by two patients. However, two patients from the PPS group indicated that moderate pain was negatively affecting their moods. For instance, PPS (2) indicated that moderate or severe pain changed her mood markedly.

> *"when the pain becomes severe or moderate, it reflects on my face, even the manager notices that because I become intense with people. When the manager gets angry with me for a mistake, I have made in my work I am in a bad mood, I cannot bear him talking to me angrily. One time I screamed at him, because I was feeling pain, so I lost my temper and screamed in his face and told him words that shall not be said." (PPS2, p3)*

PPS (2) would go to the nearest clinic to have a painkiller injection to reduce pain so that she could cope with her angry feelings.

A link between severe pain and a negative patient mood was shown in three out of five PPS patients. Two of the three patients found severe pain shortened their temper and reduced their happiness in life. For example, one patient always left home until the pain subsided and mood improved as he did not want to treat his family inappropriately. PPS (5) and PPS (2) reported that the severe pain was depressing them. The emotional responses of pain will be discussed in the following sub-theme.

> *" Severe pain makes me unhappy and unable to please my family. Sometimes I cannot sit at home due to severity of pain, so I go out to hang around with one of my friends until the pain is mildly relieved then I go back to home I do not want to stay because I do not want to treat my family in a rough manner because I become tense and irritable when there is pain." (PPS8, p6)*

6.2.1.2 Sub-theme 2: Emotional responses of pain

In the PAS group no one reported any substantial psychological problems such as depression, anxiety, and fear of movements.

> *"I neither think too much of the pain nor fear from doing certain movements. I could say I rarely got trapped with such thoughts right now." (PAS6, p3)*

In contrast, in the PPS group four patients' felt that issues that impacted on them negatively included being depressed, a fear of doing specific movements, and having distracting thoughts. Depression was reported by two patients, with one stating that back pain put substantial pressure on her, and she felt depressed.

> *"I do not want to live with this pressure of pain. I do not feel happy with this pain most of the time. Sometimes I feel so depressed that I do not want to talk to my husband or look after myself or my daughter,… I do not want to cook if I feel a severe pain because all my focus will be on pain, and I will be distracted and consequently I will prepare something bad for dinner or lunch." (PPS2, p7)*

Two patients reported being distracted due to pain. PPS (8) reported that pain was distracting him from playing chess or whilst he at work. PPS (7) indicated that he is frequently losing objects and dropping things unintentionally.

> *"My car key was lost from me more than twenty times. Something strange is happening to me." (PPS7, p2,3)*

Three PPS patients reported fearing pain recurrence and as such they would prevent themselves from doing activities that they felt could increase their pain. For example, one patient would not run when he was free of pain because he was afraid of pain recurrence, and so he adapted how he played with children to avoid increasing pain.

> *" Sometimes my kids want to play football with me, and my pain is severe, so I am helpless, now my heart is broken because I want to make them happy at this moment, but I cannot. But sometimes, if I do not feel pain, I play with them slightly that I do not run, I just stand in my place because I am afraid of feeling the pain again." (PPS8, p6)*

6.2.1.3 Sub-theme 3: Impact of pain on patients` physical activities and habits

The effect of pain on patients' level of physical activities and habits appeared to be linked to the severity of pain for both groups. PAS (10) found his activity level markedly affected by severe pain such that when in severe pain he did fewer activities and stayed at home. However, four PAS patients reported that pain had no effect on their physical activities. For instance, one patient reported that he ignored the pain when he wanted to do activities that he loved, and the enjoyment of fishing distracted him from his pain.

> *"Sometimes when I go fishing, I feel pain, and I try to ignore it. Through fishing, I forget the pain." (PAS1, p3)*

Findings from the four of the PPS group suggested that severe pain impacted on their level of physical activities. Although mild pain had no effect on patients' level of physical activities, two PPS subjects reported that they carried out activities with caution.

> *"And if I feel a mild pain, I try to prepare a very fast dinner or lunch, meaning that it takes no time to cook so that I do not feel more pain because I know my body and I try not to exceed my body's capacity." (PPS2, p4)*

Severe pain prevented four patients from doing their hobbies. PPS (5) was severely impacted by the pain, and she cried when she remembered how strong she used to be and the activities she used to engage in before her back pain. She continued that severe pain unintentionally led her to bend forward to avoid pain and that she failed to straighten her back whenever in pain, which made her unable to walk and this impacted her physical activity and psyche the most. Similarly, PPS (2) reported that severe pain prevented her from doing daily activities.

> *"When I feel severe pain, I do not prepare food. I ask my husband to order food from any restaurant,… when I am in pain, I stay into bed without moving." (PPS2, p3)*

Severe pain also prevented two patients from enjoying certain hobbies, such as watching TV. PPS (7) stated that he stopped watching TV as he did not get the enjoyment of watching TV as he did before he had severe pain. Another patient reported that when he could not find a comfortable sitting position to relieve the severe pain, then his mood became bad, and he could not enjoy watching TV.

> *"It affects me if I sit to watch TV, so I change my sitting position because I feel discomfort and sometimes pain. This matter is pissing me off a little and does not make me enjoy watching TV." (PPS9, p2)*

6.2.1.4 Subtheme 4: Impact of pain on patients` level of socialising

Being socially active with friends and family was seen as being extremely important for supporting mental health as it improved the patients` psyche, mood and made patients from both groups able to forget the pain. For example, four out of five PAS reported that the presence of their families helped them to cope better with the pain.

> *“Their presence here with me in the same house and hearing mom and dad’s voice makes me comfortable and reassured, it is possible that if I live alone, it will be hard for me to forget the pain, with my family I forget the pain, there are people I love and talk to, and this makes me easy going and helps me to forget the pain.” (PAS3, p4)*

From the PPS perspective, socialising with friends and family enhanced all the patients` psyche and mood and made the patients forget the pain. Yet, one reported that being with family would not help unless she took her medication.

> *“As soon as I get out of the house, I feel happy and my family’s presence with me outside makes me happy, but I have to take my medicines first because without taking medicines, the pain intensifies, and my psyche deteriorates.” (PPS5, p7)*

Another patient from the PPS group reported that the positive effect from socialising only occurred when the pain was mild. This enabled her to forget the pain and to reduce her worrying thoughts. In contrast, severe pain was found to impact patients` moods such that it affected their level of activities and, in turn, led them to socialise less, as reported by two patients. For example, one stated that severe pain reduced the time he spent playing with his children, whilst another reported that it prevented her from seeing her sick mother, which made her sad.

> *“If pain is mild while they are around me, I feel happy and pleased sitting with them, I also may forget my pain, or it is possible that they reduce my anxiety and help me forgetting the negative thinking that the pain may increase with time, there are many times I shall go to my mother because she is old and suffers from Alzheimer, but I feel so sad because pain prevents me from going out from home.” (PPS2, p3,9)*

In summary, the PAS group experienced fewer negative emotions, did not report any psychological issues caused by pain, carried out activities and hobbies, and socialised despite the pain. The PPS group experienced more negative emotions, reported psychological issues due to pain, performed fewer activities and socialised less when they felt severe pain.

6.2.2 Theme (2): Patients’ coping response strategies to pain

This theme described patients’ responses when in pain and the different CS they employed despite the pain. The data revealed that individuals made an effort to alleviate the pain with several strategies that were either active or passive. Four subthemes emerged: `characteristics of people who mainly used active or passive strategies', 'coping strategies adopted by patients when they had pain`, `coping with pain at work`, and 'managing pain flare-ups post-physiotherapy discharge`.

6.2.2.1 Sub-theme 1: Characteristics of people who mainly used active strategies and those who mainly used passive.

There are minimal differences in the reported duration of chronic pain between two groups. For instance, PAS (6) had LBP for two years, PAS (3) for four years, PAS (10) for ten years, PAS (1) for eleven years, and the longest duration reported was twenty-one years for PAS (4). From the PPS group, both PPS (7 and 9) had LBP for more than six months, PPS (8) for five years, PPS (5) for nine years, and the longest duration reported was fifteen years for PPS (2).This sub-theme is broken down into smaller components, as the data showed that both groups had specific features concerning self-confidence levels, psychological issues, taking responsibilities to self-manage pain, trusting and believing in their physiotherapists, and their ability to manage time for HTE.

6.2.2.1.1 Confidence to self-manage the pain

The first feature that emerged from the data was the confidence to self-manage pain. All patients from the PAS showed that they had high self-confidence to self-manage their pain at home using the advice they obtained from their physiotherapist.

In contrast, four PPS patients showed that they had low confidence to self-manage the pain at home but PPS (9), reported that he had full confidence to self-manage the pain at home. One of the four patients reported that she had always given the responsibility to her physiotherapist to manage her pain and psychological issues.

> *" I always go to the Physiotherapy. Because the pain is not relieved except with the use of medicines, no matter what I do for walking or exercises, it is not relieved, …I need someone who really understands my problem and has experience to treat me physically and psychologically, who takes care of me and is honest in his treatment." (PPS5, p6)*

6.2.2.1.2 Being responsible to self-manage the pain

Another feature reported by two PAS patients was about their realisation of their responsibilities to self-manage their pain, acknowledging that their physiotherapist had taught them how to treat themselves.

> *"To be your own therapist. To do exercises and apply ointments or a hot pack on your back. To take medicines, whatever you do but the*

> *most important thing is to self-manage your pain and cope with it." (PAS4, p3)*

However**,** most of the PPS (n=4) shifted the responsibility to an outside source, such as healthcare professionals, to take care of and to manage their pain either actively or passively, except for one patient, who showed strong determination to accept responsibility to self-manage actively. The data showed that PPS (9) was empowered by receiving appropriate education from his physiotherapist and physician about self-manage the pain.

> *" I have to show strong determination and depend on myself to ease my pain because doctor and physiotherapist have taught me how to ease my pain, so it is necessary to initiate easing my back pain by myself." (PPS9, p4)*

Other PPS patients accepted self-managing their pain at home using only passive CS, whilst the active CS, such as home exercises, was only acceptable when performed at the clinic. Several reasons were evident from the patients' data regarding why they did not accept the responsibility to do exercises at home. For example, one patient believed that his treatment responsibilities included placing God or "Allah" at the top of a pyramid, and then came the healthcare professional whom he trusted to cure him.

> *"From my point of view, I believe that Allah, the Lord of the world, will help me, here is nothing impossible and that doctors and specialists are guiding me to the treatment after Allah. Yes, I am sure that I can be treated in the future." (PPS8, p5)*

PPS (2) was worried about doing home exercises the wrong way and to make sure she did them accurately she felt she had to do them under the supervision of a physiotherapist. I believed being an insider helped me in interpreting informal language used within Kuwaiti society, such as the following quotation from PPS (5). PPS (5) stated that her depressed mood stopped her from doing exercises at home, and she went to the clinic to let her physiotherapist guide her exercises, believing that God is watching over him/her during delivering the exercises. It was evident that the rapport between the physiotherapist-patient was key to motivate her. The following quotation is extensively discussed in chapter 8, section 8.4.2.

> *"The depressed mood I feel prevents me from doing home exercises and I want to go to the clinic to do them with the physiotherapist,… I*

> *need someone to supervise my treatment, who shall be sincere, fear Allah, considerate my feelings and provides me with exercises, then I will be motivated, but at home I am not motivated at all." (PPS5, p7)*

6.2.2.1.3 Trust and belief in physiotherapists

The physiotherapists` understanding of the patients' problems played an important role in increasing patients` trust and belief. Trust and belief in their physiotherapists' capability to prescribe exercises appropriate for them was a feature in three patients of the PAS group. These three patients acknowledged the physiotherapists' understanding of providing a HTE appropriate for their problems and thus trusted the HTE to reduce their pain if they followed it.

> *"he gives you the appropriate exercises for this problem. I knew that if I go to the physiotherapy, the pain will be relieved." (PAS3, p2)*

However, contradictory data were found in one PPS, as the patient did not believe and trust the HTE given be the physiotherapist to resolve her back pain. The patient had a negative experience in physiotherapy as she was surprised that she had not been appropriately examined before being given the HTE, which was opposite to her expectation. My opinion about her physiotherapist's treatment plan and the patient's negative experience were captured in my diary.

> *"Exercises do not help, then why shall I do them?,… I read on the Internet about physiotherapy; initially, the physiotherapist examines the patient but when I went for the 1st session, she told me to lie down, she put the hot pack and electrical device. At the beginning, I said to myself that this is the adopted protocol for the first session and the following sessions she would give me exercises. Unfortunately, it was repeated in the second and third session until she burned my back and I quarrelled with her." (PPS2, p5,9)*

6.2.2.1.4 Ability to manage time for self-managing the pain

Most of the PAS patients (n=4) stated that they had the time to apply HTE, except for one patient, PAS (4), who was severely impacted by the pandemic and could not find time to self-manage the pain. Similarly, the same data were found in the PPS group, as most patients (n=4) reported that they had time to do the prescribed HTE, except for PPS (8), who could not find time. Although all patients seemed to have the time for the key difference between both groups was that most of the PPS group did not adopt HTE (n=4), and three out of five PPS patients said they were not motivated to do home exercises.

> *"Of course, I have time, but I am not motivated to do exercises at home." (PPS2, p7)*

6.2.2.2 Subtheme 2: Coping strategies patients adopted when they are in pain

This subtheme showed the CS used by patients when in pain to control/reduce the pain. These CS had further components, such as reliance on exercise activity, reliance on medicine, paying no attention to pain, home and posture adjustment techniques and using spiritual and religious CS. The coping strategies represent both active and passive. During the interviews it was noted that there are minimal differences in the reported duration of chronic pain between two groups with the longest duration being reported of 21 years for a PAS patient, whilst the longest duration reported for a PPS patient was 15 years. The durations of pain ranged from 1 year to 21 years for the PAS group and 6 months to 15 years for the PPS group.

6.2.2.2.1 Reliance on home exercises and physical activities

The data suggested that all PAS patients used several exercises and activities when experiencing pain, and they considered it to be the best strategy. For example, two patients realised that walking was the optimum strategy that reduced their pain, and for one controlled stress related to the pain.

> *"Walking is my miracle treatment,…as soon as I walk, I feel it going away,…I can run for long-distance. I seek to control my temper and stress through walking, which makes me feel comfortable and ease the pain." (PAS6, p6)*

All five PAS relied heavily on HTE to cope with the pain. PAS (10) reported that he was active and did several exercises to strengthen his whole body, but when it came to back pain, he would do the exercises prescribed by his physiotherapist, targeting exercises for pain reduction. Three out of the PAS also used heat therapy as a secondary CS in addition to HTE.

Only PPS (9) in the PPS group used heat therapy in addition to the HTE. In the PPS group most patients (n=4) did not rely on HTE as a CS to self-manage their pain, except for PPS (9), who highly depended on HTE. Possible reasons reported were for PPS (5) and PPS (2) that there was no point in doing HTE that were not helping to relieve the pain.

> *"Exercises do not help, then why shall I do them?" (PPS2, p9)*

PPS (8) confessed to being a lazy man when it comes to HTE. Even though he had been taught the importance of doing HTE for his back pain, he rarely did HTE. PPS (7) further revealed that the HTE caused pain, thus he avoided it.

> *"I can't do exercises because it hurts me. So, I am afraid of doing it as if I do it, the pain will increase." (PPS7, p4)*

6.2.2.2.2 Reliance on medicine

Regarding pain medication to manage back pain, the data revealed that all the PAS group used medication less to cope with their back pain compared to the PPS group. One PAS patient indicated that she did use medicine on occasions when necessary.

> *" I try as much as I can to stay away from taking medicines except for necessity." (PAS4, p5)*

Two PAS reported that they refrained from using painkillers.as PAS (10) explained that stomach issues allowed him to use paracetamol only and he did so rarely. PAS 3 reported that these medicines only masked the pain and believed that prolonged use would harm her body, but instead, found benefit in exercises.

> *" medicine is not suitable for my case because it only masks the pain,… I found that stop taking medicines flares up the pain again. I noticed the necessity of doing exercises." (PAS3, p3,5).*

Reasons for less reliance on medications to cope with their pain. in the PAS patients were that they were not effective. One patient ignored the pain as a CS. When ignoring pain did not work, he might use a painkiller to reduce the pain a little, and together with physiotherapy, the pain would be completely relieved.

> *"I do not like medicines much. When I feel pain, I do not pay attention for it and if it becomes much worse, i go to the doctor to refer me to the physiotherapy. Medicines do not recover pain,…I undergo physiotherapy and accordingly the pain goes away." (PAS1, p1)*

Most of the PAS group (n=4) noted that HTE effectively reduced their pain and did not take medication. For instance, PAS (4) reported that by doing exercises in water she felt energised, and these exercises enabled her to carry weights that she was unable to do before and she could walk for longer distances without pain. Two patients, PAS (1) and PAS (10), sometimes had to adopt passive CS of taking medications when HTE failed to relieve their pain significantly.

In contrast, the majority of the PPS group,(n=4), relied highly on medication as they felt that HTE did not relieve their pain. The exception was for PPS (9) who relied on HTE instead of consuming medication. One patient who lived alone described how medicine was his friend and he relied on this to relieve his pain.

> *"I want a medicine to relieve my pain, no one is here with me or comes to me when I need. The medicine is my friend, but I do not want medicines that make me feel sleepy. I want something effective; I can't do exercises because it hurts me. So, I am afraid of doing it as if I do it, the pain will increase. I cry so much and quickly so that I leave everything if I hear something sad and cry for a long time." (PPS7, p4)*

One PPS patient reported the negative effect of not taking her medication.

> *" I take Lyrica and Arcoxia. If a day passes without taking them, my mood breaks down and my condition worsens. A few days ago, they [medicines] ran out. The pain prevented me from sleeping, the severity of pain almost killed me." (PPS5, p2)*

6.2.2.2.3 Ignoring pain technique

Four PAS patients coped with their pain by ignoring it and patients` abilities to ignore the pain appear linked to pain severity. PAS (1) and PAS (10) noted using a pain ignoring technique when the pain was below severe. One Kuwaiti patient used the Kuwaiti saying, "ignoring was the best revenge" as a strategy to fight her back pain.

> *"during work I do not pay attention to it and I try to ignore it, and you know here in Kuwait we say, "To Ignore is the Best Revenge." (PAS3, p3).*

In contrast, no one from the PPS group reported using ignoring pain technique. One PPS engaged in activities to distract himself particularly when in work, i.e. diverting pain attention from mild pain.

> *" If its mild pain, I try to get out home or try to play with the children, meaning that I try to forget and distract myself about pain." (PPS8, p5,8)*

6.2.2.2.4 Home and posture adjustment technique

Three PAS patients made adjustments at home and their posture as practical techniques to cope better with pain, such as placing a pillow between their knees when going to sleep or using a pillow at the lower back. Another indicated that she coped already with her pain and made adjustments to help her.

> *" I try to cope with it [pain], I bought a medical sofa which is harder than the regular one because after a while of sitting on the regular soft sofa I cannot stand up and I feel severe pain in my back, I bought a hard-medical mattress that comforts me and when I wake up, I do not feel pain like the soft mattress." (PAS4, p2)*

However, there were no data from the PPS group regarding adjusting posture or equipment.

6.2.2.2.5 Using spiritual, religious coping strategies

Nobody from the PAS group reported using spirituality as a CS. By contrast, three PPS used the strategy frequently for pain reduction. As discussed previously in literature review chapter, a common belief among Muslims is that pain is caused by Allah, so they assign their suffering to Him (Salleh et al. 2009; Dedeli and Kaptan 2013). PPS (2) frequently prayed to Allah when she was in a bad mood caused by her pain, and asked God why her pain did not settle. PPS (2) prayed to Allah during rainfall, as rainfalls are seen as a blessing from Allah in Islam and are believed to be a good time for supplications, which is a way for Muslims to communicate with Allah to seek personal needs, forgiveness and help.

> *"I just sit at home, because my mood is so bad that I pray to Allah or when the rain falls and I say, Allah, why does not my pain disappear?" (PPS2, p3)*

PPS (5) and PPS (8) reported that praying to Allah was an effective strategy in reducing their pain. PPS (5) prayed to Allah as well as using medication.

> *“Yesterday my psyche was deteriorated because pain was severe, so I prayed to god to ease my pain, and I cried while I was praying, and along with taking Lyrica tablets, my pain was relieved, praise be to Allah." (PPS5, p6)*

PPS (8) reported that praying as a CS worked significantly for him, especially when he reached submissiveness from worship to God as it was not only effective in reducing the pain but also enhanced his mood. From PPS (8) perspective, performing prayer to Allah had a therapeutic effect that made him felt inner peace and distracted his thoughts, which might interrupt his pain.

> *" when I cry and ask forgiveness and pray at night in fear of Allah I completely feel no pain and in fact this result, thanks to Allah lord of the world, is great that makes me feel a good that makes the pain disappear and the mood becomes better." (PPS8, p8)*

These previous results from PPS (2, 5, and 8) were introduced and discussed in the methods chapter (Chapter 4), section 4.7.5.1, in relation to sense-making of CLBP.

6.2.2.3 Subtheme 3: Coping with pain at work

In this subtheme, the data indicated that patients also used CS whilst at work to cope better with their pain and these CS were different amongst both groups. Two patients, PPS (5) and PAS (10) were unable to reflect on their experiences about how they could cope with pain at work as the pain started after they retired.

When asked about what CS they used to deal with the pain at work, four PAS stated that they were using active CS and presented almost the same strategies that they used at home as reported previously. Walking was reported by the majority (n=4), paying no attention to pain at work was reported by 3 PAS, and one patient used heat therapy. Furthermore, three patients used a low back support whilst sitting and two patients did the HTE prescribed by their physiotherapists.

> *"Sometimes I feel very severe pain, at this moment I stand up, do some walking and do bending to my back to the back and forward, or in a circular way." (PAS3, p3)*

The PAS group was found to cope successfully with their pain at work, as suggested by four patients. For example, one patient stated that she coped very well with her pain and lived with it, despite the feeling of the pain.

> *"I feel pain, but I got used to it,… it does not affect me at work. Yes, I feel pain when I stand for a long time, but I got used to it." (PAS4, p2).*

Similar to the PAS group, PPS (9) was the only one of the PPS group, who was coping well with his pain at work by adopting an active CS, such as walking. However, the data revealed that most of the PPS group did not cope well with their pain at work, as two PPS patients reported that were absent from work when the pain was moderate to severe. For instance, PPS (2) left work to go home when she experienced severe pain, or she sought the nearest clinic for a painkiller when her boss did not allow her to go home. One PPS patient illustrated the reasons for leaving or being absent from work when the pain was severe.

> *“When there is moderate to severe pain, I do not go to work, and when the pain is mild, I have no problem to go to work, and, if my pain becomes very severe, I leave work because I work as an*

> *employee in customs and I need to be in my full focus during the transfer of luggage and airport transaction." (PPS8, p6)*

One PPS patient lost the ambition and satisfaction that he previously gained from work as the pain affected movement.

> *"This all affects my movement and of course the work has become difficult for me. I do not feel the pleasure of work, I just go to work to do it, meaning that I am doing the duty". (PPS7, p2)*

6.2.2.4 Subtheme 4: Managing pain flare-ups post-physiotherapy discharge

Pain in CLBP can fluctuate and all PAS patients used different methods to manage pain flare-ups, mainly adopting active CS such as exercises.

> *"The first thing is to do the exercises that I got from physiotherapy_ the most profitable thing is when I do stretching exercises for my back and lie down on my back on hard ground. " (PAS1, p5)*

However, most of the PPS (n=4) mainly utilised passive CS to deal with any pain flare-ups with medication being common.

> *"Sometimes Paracetamol eases pain,…but if pain is severe or moderate, there is nothing can ease my pain yet the injections. Now, I go to the doctor if pain is moderate or severe… But you should know that when I am in pain, I stay into bed without moving." (PPS2, p3,7)*

The PAS group adopted less passive CS, and when they did, they usually combined it with an active CS. For example, four out of five PAS patients used heat therapy as an adjunct to HTE. Conversely, two PPS patients used a hot pack with one of them using it in combination with HTE. The PAS group also tried to avoid using medicine during pain flare-ups, but some did take medicine when the HTE did not reduce the pain intensity.

> *"If the pain is getting worse, I take a pain killer and do the exercises recommended by the physiotherapist." (PAS6, p6).*

Several reasons caused patients from both groups to return to their GP or physiotherapist after completing their course of treatment. In the PAS group, three indicated that they might go back to either their GP or physiotherapist when they failed to self-manage and control severe pain, even though two patients out of the five would not go back until the pain had reached a point where it disturbed their sleep.

> *"Maybe if I reach a point, I cannot handle it and I cannot relieve the pain, meaning that I have done my best and the pain is still there."* *(PAS4, p4)*

The data demonstrated that three PAS patients returned less often to physiotherapy. For example, PAS (10) trusted the ability of the physiotherapist to provide pain reduction more than his GP, who only prescribed medication that he believed harmed his stomach. Another reason from three PAS patients was that the physiotherapy course was only effective in reducing pain for a short time, and when they failed to control the pain, they returned to physiotherapy. One patient reported that he was diagnosed differently and had different medications every time he visited a physician. Fear of uncertainty of diagnoses made him want to know what was going on with his back.

> *" I visit the doctor and he conducts X-ray to investigate the problem then he says that I suffer from severe muscle spasm and another doctor says another diagnosis. They are not agreed upon a single diagnosis, so I feel scared and go to have physiotherapy sessions."* *(PAS1, p2)*

The PPS group generally reported opposite perspectives to the PAS group as they would go back to their GP after failing to self-manage the pain. PPS (8) and PPS (9) would return when they reached a point where their pain restricted their physical activities, whereas PPS (2), would return to the GP when the pain decreased the patients' ability to regulate emotions. Two patients further reported that they would go back to the GP because persistent pain, whilst one patient did not want to go to physiotherapy anymore, as physiotherapy only prescribed HTE instead of medicine and provided only exercises which were contrary to what the patient felt was needed.

> *"At the beginning before referring me to the Physiotherapy, I thought that physiotherapy contains medications, so Physiotherapist would prescribe medicines to me, but I discovered that it is just movements and exercises, so I do not think that I will return to Physiotherapy again." (PPS7, p5)*

Two PPS patients highly relied on the passive treatment provided at physiotherapy. One patient reported that the passive treatment effectively reduced pain, and she became highly reliant on physiotherapists because she felt the benefit.

> *"When the severity of the pain increases, I return to take a referral for physiotherapy because the electrical device, massage and the*

> *hot pack help me very much and relieve my pain, …The physiotherapy eases pain and straightens my back so I feel so happy for that." (PPS5, p2,8)*

Only one patient from the PPS group said would go back to GP when his pain was limiting his daily life activities and wanted to know why the pain was re-occurring.

> *"If the pain becomes continuous, does not ease with doing home exercises and prevents me from practising my daily life,…drive my car, run, stand or sit or do my work normally. I will ask myself why did it not ease this time? So, I'll go to the doctor to see what is wrong with the pain, and do I need to go to physiotherapy again or not?" (PPS9, p6)*

In summary, the PAS group appear to be more confident and able to take responsibility to self-manage the pain and to believe in physiotherapists' treatment. They in the main used active CS to deal with pain, such as exercises and relied less on medications. However, the PPS group appeared not to be confident to self-manage the pain and shifted their responsibilities to physiotherapists. They used passive CS the most, e.g. using medications, adopted fewer exercises and physical activities, and prayed to God to relieve the pain.

6.2.3 Theme (3): Patients` perceptions as recipients of healthcare education

Patients received advice and education about CLBP, from physicians and physiotherapists. This theme consisted of two subthemes, i.e. `the perceived quality of education from physicians prior to physiotherapy sessions`, and `patients` perspectives on physiotherapists' education during physiotherapy`.

6.2.3.1 Subtheme 1: Perceived quality of education from physicians prior to physiotherapy sessions

Some patients from the PAS and the PPS groups received different advice from their physicians regarding what best to do before attending physiotherapy sessions. Two patients, one from each group, reported that their physicians advised them not to engage in certain exercises to minimise harm. For example, one PAS patient indicated that on his visit to the physician who used an X-ray to diagnose his condition, the physician advised him against engaging in any running activities or back stretching exercises. Interestingly, the data could indicate that some physicians were biomedically oriented toward managing CLBP in Kuwait.

> *"He said [the physician] that the last lower back vertebra sticks to the first vertebra of the pelvis and accordingly, he prevented me*

> *from running and from lower back stretching exercises." (PAS1, p1)*

In contrast, an alternative understanding was reported as the physician trusted and endorsed active treatment for CLBP at physiotherapy after the patient had received injections.

> *"advised me to stop taking back injections because the pain returned every 3 months but undergo physiotherapy. So, I asked him about the reason behind injections ceasing especially when it greatly relieves my pain, he answered that I received a sufficient course of back injections and in the meantime, I have to practice water exercises." (PPS5, p1)*

6.2.3.2 Subtheme 2: Patients` perspectives on physiotherapists' education during physiotherapy

Physiotherapists were reported to give both the PAS and the PPS groups general advice about coping with pain at home, such as applying heat therapy, advice to enhance sleeping and to maintain the curvature of spine, and about the importance of adherence to HTE. Most of the PAS group (n=4) were given education about how to perform each HTE. In contrast, only two patients from the PPS group reported receiving this information, with one patient receiving no education, and one patient receiving education for only some of the HTE.

Regarding exercise progression, two patients from the PAS group reported that they had received education about how to progress each exercise at home. In the PPS group, most patients (n=4) said they had not been educated about how to progress each HTE, except for one patient PPS (9) who reported receiving adequate education. Two of the four PPS further reported they had just been told to increase the number of repetitions and were not sure whether this was considered as exercise progression or not.

> *"No, she did not tell me how to make it harder and did not talk about anything else." (PPS2, p6)*

Three out of five patients from the PAS group reported that they had received adequate education from their physiotherapists concerning the use and benefit of each given HTE. One patient reported that he had not received a thorough education, but general information and he further reported that he did not know the exact muscle which would be benefited from applying the HTE (PAS1). Only one patient reported that he had obtained a good education about some of the given exercises (PAS3).

> *" I was not taught how to exactly benefit from exercises or which muscles need to be strengthened. They just told me for example, this exercise stretches lower back muscles, and this exercise strengthens lower back muscles, but I don't know which muscle exactly." (PAS1, p4)*

The data from the PPS group were contradictory to those from the PAS group. Most of the patients (n=4) indicated that they had not received education regarding the benefit of each HTE, whilst only one patient (PPS 9) reported that he had. One patient from the PPS group reported that he had obtained general education about the benefit of the HTE.

> *"He generally taught me that this exercise is good for the back, this one is good for the abdomen and this one is good for pelvis, and so on." (PPS8, p4)*

With respect to receiving education about the length of time to continue with the HTE following completion of physiotherapy, the majority (n=4) from each group had insufficient details. One patient from the PPS group indicated that she had just been told to do the exercises at home but no other details. "Allah alone knows" is informal language used in Kuwait, as Muslims commonly believe that Allah knows everything. As mentioned previously in the literature review chapter, that it has been written in the Qur'an (57:22) that everything is recorded in the Book by Allah (Itani 2012, p288). Thus, PPS (5) used this phrase to strongly express that she had not been taught about exercise details.

> *“They just told me to do the exercises at home, even in regard with swimming they just told me to do water exercises. They did not tell me what exercises I shall do, how to do them and how many times to do through the week. Allah alone knows." (PPS5, p5)*

Only one patient from each group reported that they knew how long to continue with HTE.

The benefit of the physiotherapists` education and advice from patients` perspectives was inconsistent amongst all patients as in both groups three patients reported that it was useful, and two stated that it was not. Two patients from the PAS group explained that the advice and HTE were not effective in reducing their pain.

> *"I do not remember any advice, there are only physical exercises and are helpful at a rate of 30 to 40 per cent." (PAS10, p3)*

PPS (5) explained that she had been advised to do water exercises as SMS, but that was not appropriate for her as she was short and could not swim in deep pools. Another patient lacked trust in her physiotherapist, stating that the way the physiotherapist planned the programme of HTE for her was unprofessional as her physiotherapist prescribed two general types of exercises and never did any bed examinations to tailor the plan of the HTE. The patient reflected her experience she had in physiotherapy sessions as detailed below.

> *" [Patient laughing], Advice? Are you serious? I swear to god, the three courses I have completed are a farce and a total waste of my time, …How did she know that the two exercises would suit my problem while she did not do a comprehensive assessment for me? I swear to Allah that I entered the room, and she told me that I suffer from chronic lower back pain, she told me to lay down on my abdomen, and she put an electrical device and hot pack on my back. I did not notice any examination or anything like that. " (PPS2, p4,6)*

In summary, patient advice from the physicians varied and the patients received considerable HTE advice from the physiotherapist, but with variable education about HTE details, with the PAS group appearing to received slightly more education from their physiotherapists.

6.2.4 Theme (4): Factors influencing patients` adherence to home treatment exercises as self-management strategies.

Numerous factors guiding patients with CLBP to adhere or not to HTE were noted. This theme presents factors that emerged from both groups that demonstrated reasons behind patients` adherence to HTE. It consisted of two subthemes, i.e. `factors motivating patients’ adherence to home treatment exercises`, and `factors hindering patients’ adherence to home treatment exercises.

6.2.4.1 Subtheme 1: Factors motivating patients’ adherence to home treatment exercises.

Various factors were evident that encouraged both the PAS and the PPS groups to adhere to HTE prescribed by their physiotherapists post-physiotherapy course. However, the number of influencing factors demonstrated by the PAS group were double than for the PPS, (8 versus 4). Pain was motivating factor for the PAS group (n=4) to complete the HTE.

> *"Pain also motivates me, if there is a pain, there are exercises I must do to relieve pain." (PAS3, p6)*

Psychosocial factors including mood, could be crucial for better adherence to HTE and a good mood being influential were mentioned by two patients from the PAS and one from the PPS. Fear of pain was revealed to motivate one patient from the PPS group as he compared his current pain to what it was at the beginning and found motivation in this to continue. The patient attributed the credit for pain reduction to God first then to his physiotherapist and expressed belief that the HTE programme could help prevent his pain from relapsing.

> *“Just as soon as I think about my previous pain, how it was and how I am now, thanks to Allah, and then thanks to physiotherapy, I get motivated to do exercises and apply instructions because I do not want to feel the pain like the first time because it was severe." (PPS9, p5)*

Social support for patients was seen as important and included family interactions. For example, two patients from the PAS group reported that they received social support from their family and that this was a key thing which helped them to better adhere to the HTE. They were obtaining sufficient support from their wives who reminded them to do their HTE.

> *"My wife always motivates me and reminds me to do exercises." (PAS10, p5)*

In contrast, family support was not mentioned by the PPS group. Two patients reported that they would do HTE only when the exercises reduced the pain, and then they would do it for the sake of caring for their family. They were feeling responsible towards their family, and this was motivating them rather than receiving support from them.

> *"If I feel that if the exercises ease my pain, I would do it for my mother in the first place because she is old and I want to be around her to look after here, and for my husband and young daughter to be happy with them." (PPS2, p8)*

Further motivating factors reported from the PAS group involved missing their hobby that they previously enjoyed (PAS6) and a quiet home atmosphere (PAS1). A new HTE programme was found to motivate one patient from the PAS group, and so she was breaking down the exercise routine that she was doing every day by looking on the internet for new kinds of exercise (PAS3). One patient found that water exercises, which were the exercises she loved the most, were the best solution for her CLBP (PAS4). Supervision by a physiotherapist at the clinic was another factor that motivated one patient more than doing exercises at home. The patient indicated that even though she was already motivated to do them at home, the physiotherapist increased her motivation more.

> *"To be supervised by a physiotherapist, it raises my morale's and motivating me more than I do them by myself at home." (PAS3, p6)*

Three patients from the PPS group reported that they were never motivated to do HTE, but being supervised by physiotherapists at the clinic was the only thing which kept them motivated to do the HTE at the clinic. As an explanation as to why being supervised by physiotherapists kept them motivated; two stated that it was because of the rapport that the physiotherapist built with them, and that they felt that they had been delivered excellent care.

> *"as long as the physiotherapist laughs with me, talks to me a lot, takes care of me and follows me step by step, for example, raise your leg, Yes you can do it and raise your back a little more, I feel excited and motivated and there is a great care in private clinics." (PPS5, p4)*

One patient further explained that he could not escape from doing exercises at clinic compared to at home (PPS8). Another reason revealed by three PPS patients was that they wanted physiotherapists to guide the treatment exercises because they had not got enough confidence to do them correctly at home and feared they would do them incorrectly. For example, one patient reported that she had more confidence to do the exercises under the supervision of the physiotherapist. She would then not be afraid when the pain increased from doing exercises as she could simply ask her physiotherapist to change the exercises that increased her pain. Moreover, she felt safer at the clinic site as she could go to a physician to prescribe a painkiller whenever she needed one.

> *"I want to be sure that this exercise will not increase my back pain, and if that happened, I can tell him that my back hurts in order to change the exercise or to stop doing it, and if it happened and the pain increased, then I am in the hospital, I can go to the doctor to take the injection if things get worse. It might be that I want to feel*

> *more confidence in the presence of a physiotherapist to supervise me while doing exercises." (PPS2, p7)*

Three PPS stated that when they felt the benefits of doing HTE, such as reduction in pain intensity, this helped them adhered to HTE. The final factor revealed was when patients heard positive stories about other patients with CLBP, i.e. how they achieved pain relief by adopting HTE as SMS. They then became trusting in the HTE and motivated.

> *"When my friends call me,…and that they have friends who had the same problem as me, and with the commitment to do exercises, the pain was relieved from them, so I want my pain to be relieved like them." (PPS9, p5)*

6.2.4.2 Subtheme 2: Factors hindering patients' adherence to home treatment exercises.

This subtheme showed the factors that hindered patients' commitment to HTE for both groups. The most frequent factors reported by the PAS group were when they were sick (n=4, PAS), had not got enough sleep (n=2, PAS), being not in a mood for doing HTE (n=1, PAS), and boredom with the same programme (n=1, PAS). Moreover, one patient stated that he realised that when he received different diagnoses from several physicians this confused him. He also received different HTE programmes designed for his diagnoses from his physiotherapists and did not know which programme he should adhere to (PAS1).

One patient from the PPS group reported that severe back pain prevented him from doing HTE. The patient was worried that his condition might deteriorate if he did the HTE.

> *"my back is like a stiff stone, my physiotherapist gave me exercises, but I cannot do it. My body is mummified like wood and the feeling of tingling in my leg with a feeling like a thing pressed on my leg and my toes. Also, severe pain prevents me from doing exercises like what I told you before. I fear that my condition will worsen when I do exercises." (PPS7, p2,4)*

Several patients` preferred only doing the exercises in clinic with the physiotherapist and PPS (5) reported that she received the HTE programme on paper and that she did not like it and she never opened it. The patients` ability to do the HTE was reported by (PPS5) as a key factor that prevented her adherence to HTE. She reported that she never did aquatic exercises when the physiotherapist prescribed them to her as SMS as they were beyond her capability as she was short and hydrotherapy pools here in Kuwait were too deep for swimming.

Appropriate spaces were important for some and when a patient was unable to find a place at home to do the HTE, it hindered adherence. For example, PPS (7) lived in a very small flat, and he blamed the small size, saying that it prevented him from doing the HTE programme.

For both the PAS and the PPS group psychological factors, acted as barriers to engaging in the HTE, including bad mood (n= 3, PAS; 4, PPS), anxiety (n=1, PAS; 2, PPS), depression (n=2, PPS) and stress (n= 1, PPS). For both groups, this was compounded by social factors, such as caring for a large family.

> *"Currently, I do not have time to do exercises because I have to monitor my children while they are taking online lessons and prepare breakfast and lunch for them. Furthermore, I come back home tired from work, and I prepare food for my husband and children, …and then the online lessons start, so I have to monitor them.” (PAS4, p4)*

The data revealed that socialising with family improved patients` emotions and pain, and vice versa and three patients from the PPS group, would never do their HTE when they missed their family.

> *"The presence of family helps me to reduce pain but not to cure the problem. If they are not here, I may never do the home exercises, and the pain and frustration will increase." (PPS8, p7)*

PPS (7) indicated that family concerns affected him severely including loss of appetite and he would do HTE when his mind was calm.

> *" My mind always busy with my son and daughter in Egypt. I want my mood clear and high, but this does not happen to much now because I do not eat. Sometimes, I serve food in front of me, but I do not eat because my mood is not in good status." (PPS7, p4)*

Socialising with family or participating in social events was a factor that prevented one patient from doing HTE, as she became distracted and busy preparing for events and had no time to apply HTE (PPS5).

Findings from the PAS group showed that when they perceived no benefits from doing the HTE which decreased motivation.

> *"I persevered exercising for almost two months then I got bored for it because it doesn't work. So why shall I do exercises that only reduce the pain a little? I need something to heal my pain." (PAS1, p3)*

Two patients from the PPS group, (PPS5) and (PPS2), reported that HTE never reduced their pain at all, and thus they doubted why they should do exercises which did not significantly reduce their pain.

> *"Nothing motivates me because basically the exercises do not produce the desired results." (PPS2, p2)*

Both groups shared common barriers with respect to engaging in HTE. These included being free of pain, (n=2, PAS; 1, PPS), work exhaustion (n=2, PAS; 2, PPS), and self-reported laziness (n=1, PAS; 4, PPS). Moreover, being prescribed too many HTE by the physiotherapists to be completed daily reduced patients' commitment to THE, but did not stop them from doing a selection (n=2, PAS; 2, PPS

> *"Many home exercises do not stop me because I choose two or three exercises from them, but rather it reduces my motivation for doing exercises; many exercises make you a little confused." (PAS10, p7)*

Similarly, PPS (8) panicked when he saw that he had been given more than twelve HTE, so he selected a few exercises. Patient (PAS4) illustrated that doing too many exercises induced night pain, and she did not apply the exercises based on land, instead preferring the aquatic exercises. In contrast, one patient indicated that she was dissatisfied with the small number of HTE, i.e. two exercises, and that she believed that this was not considered a HEP because these two exercises were ineffective in reducing her pain.

> *"You are a researcher in chronic back pain, do you think that only two exercises are enough for my pain? Where are the other exercises? Any exercises programme? Only two exercises did not ease my pain at all. Basically, I didn't feel a difference with doing them." (PPS2, p6)*

6.3 Summary

Four main themes emerged from the patient data shedding light on patient profiles as to how patients were able to self-manage their pain post-physiotherapy course. The multidimensional nature of pain affected the PAS and the PPS groups as both psychological and social aspects were evident in the data. Both groups showed they had no psychological problems when they had mild pain, but severe pain did impact their emotional status, with the PPS group being impacted the most. Moderate pain had no effects on the PAS group`s emotional status, whereas it influenced the emotional status of the PPS group.

The impact of pain on patients' psychological status was only seen in the PPS group and this included depression, distracted thoughts, and fear of pain. The impact on patients' level of activities and habits was also dependent on the severity of pain. Severe pain impacted patients` level of activities and habits, with the PPS group being more impacted than the PAS group. The family role was vital in enhancing patients' mood in both groups, with socialising with their family improving their mood. However, the effect of the family from the PPS perspective was achieved only when the pain was mild. The PPS group was also impacted by severe pain which caused them to socialise less with their family.

The data also showed that the groups were dissimilar in their CS when in pain. The PAS group all accepted being responsible for self-care and made efforts to manage the pain, and all had high self-confidence, trusted the prescribed HTE, and were able to manage time for HTE. In contrast, the PPS group showed helplessness and submitted their responsibility to self-manage the pain to an outside source. The majority had low self-confidence, did not do the HTE even though they admitted that they had plenty of time for doing HTE, and some distrusted the HTE programme.

The data suggested that the CS were somewhat different between both groups. The PAS group frequently used more active CS to deal with pain, such as using HTE, paying no attention to pain, using home and posture adjustment techniques, and showing less reliance on passive CS, such medication and catastrophising. Conversely, the PPS group used less active CS in comparison to the PAS group, such as a lower adoption of HTE to deal with pain. All the PPS group indicated that medication was the most used passive CS, and more than half of the group used spiritual passive CS, such as praying and hoping, which they found to be effective in reducing their pain.

Both groups coped with pain differently, and each group had the same CS at home, at work, and when they had pain flare-ups. The PAS group mainly relied on active CS, but the PPS group mainly relied on passive CS. The main difference between both groups was with regard to the point at which they would go back to their GP or physiotherapy, with the PAS group going back only when their active approach did not change the pain, whereas the PPS group would make only a passive effort to self-manage the pain before returning to the GP or to physiotherapy.

According to some patients' perspectives, physicians delivered different advice and recommendations regarding self-managing the pain prior to the physiotherapy. This advice and recommendation given might be built on a biomedical model of pain. The data revealed that physiotherapists delivered general advice about patient strategies to cope with pain at home, and further details about HTE for the PAS and the PPS groups. However, the quality and depth of exercise education that the physiotherapist delivered to each patient from each group was different, with the PPS group reported receiving less exercises education compared with the PAS group.

Several factors influenced patients' motivation to do HTE. Although there were common factors that increased their motivation for HTE, the number of influencing factors for the PAS group was double compared to the PPS group. Social/family support was a critical factor that helped the PAS group to cope better with pain, whereas the PPS group did not report this. The PPS group were not motivated to do HTE at home but were motivated in the clinic under physiotherapist guidance. Both groups also showed similar and dissimilar factors that reduced their motivation. The psychosocial factors affected the PPS group more than the PAS group and possibly this is the reason for the PPS group being less committed to HTE.

Chapter 7: Physiotherapists' qualitative results

7.1 Overview

This chapter reports the qualitative results from the TA of the six semi-structured interviews conducted with physiotherapists. The interviews explored physiotherapists` perspectives and opinions about patients' CS and their ability to self-manage their pain post-physiotherapy treatment in Kuwait. Two main themes emerged and are presented below.

7.2 Qualitative data results for physiotherapists

Six physiotherapists (three males and three females) participated in semi-structured interviews. Five physiotherapists were Kuwaitis, and one was Egyptian. Two females had extra work due to their out-patient duties; one worked privately with in-patients and in the rehabilitation centre and one was an international tutor in kinetic control therapy. The recruitment of physiotherapists was stopped after six participants, as discussed in the methods chapter. Table 7.1 lists the details of the physiotherapists.

Table 7.1 Details of the physiotherapist

Physio ID	Gender	Age	Nationality	Grade	Post-graduate training (MSc/MACP member/PhD/None)	Working years as a physiotherapist (experience)	Treating CLBP patients for	Environment working
1	Male	36	Kuwaiti	Specialist	None	14	More than 10 years	Working in a government hospital/outpatient clinic
2	Male	69	Egyptian	Chief specialist	MACP	30	More than 10 years	Working in a government hospital/out-patient clinic
3	Male	54	Kuwaiti	Chief specialist	MACP	30	More than 10 years	Working in a government hospital/out-patient clinic
4	Female	35	Kuwaiti	Specialist	MSc in PT	13	More than 10 years	Working in a government hospital/out-patient clinic
5	Female	40	Kuwaiti	First specialist	PhD in PT	18	10 years	Working in a government hospital/out- and in-patient clinics/rehabilitation centre
6	Female	49	Kuwaiti	Chief specialist	None	23	More than 10 years	Working in a government hospital/out-patient clinic/Tutor for Prime Physio-UK and an international tutor

								in kinetic control therapy

Key: Specialist= experience >10 years, first specialist=experience > 14 years, chief specialist= experience>18 years

7.3 Introduction to the main themes

The physiotherapists’ perceptions and opinions of CLBP patients’ CS and their SMS were obtained through an in-depth analysis of the semi-structured interviews. The main themes and subthemes which emerged were mapped using reflexive TA (Figure 8), and these themes revealed and enhanced my understanding about physiotherapists` perceptions of SMS, patient assessment and home exercise programmes. The two main themes were ‘physiotherapists’ perceptions of self-management strategies/Home treatment plan’,’ and `patient assessment and home exercises programme’.

The data revealed that the physiotherapists knew what SMS/HTP referred to and were aware of the possible challenges which patients might face during the HTE as SMS, and what approaches should be taken to facilitate the SMS. According to the physiotherapists interviewed, patients seen at the physiotherapy department had little knowledge about their condition and thus the physiotherapists’ educational role played a pivotal part in facilitating the SMS. The data also indicated that the exercise details in the HTE programme meant that the SMS could be tailored differently to individuals, and this was achieved when the physiotherapists screened and considered the patients’ CS.

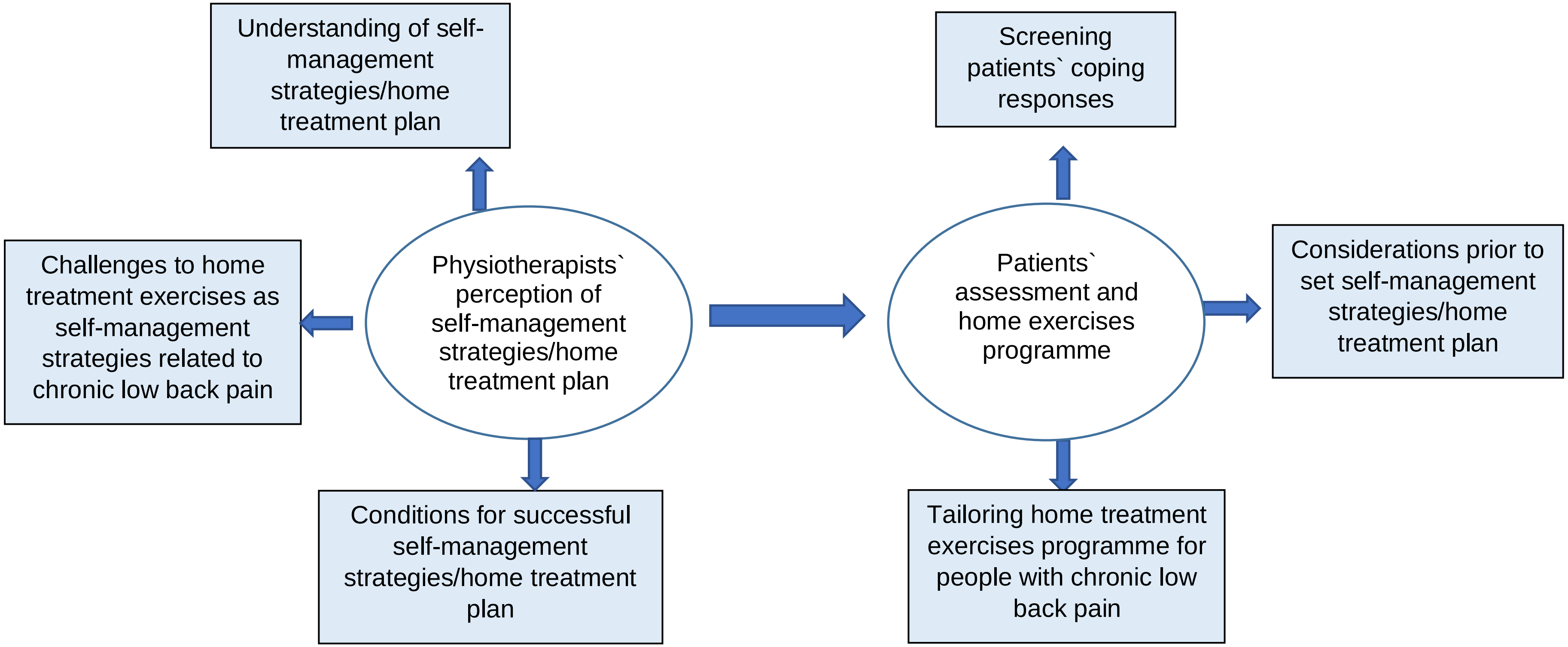


Figure 8. The two themes (white circle) which emerged from the interview data

7.3.1 Theme (1): Physiotherapists’ perception of self-management strategies/home treatment plan

The first theme that emerged from the data consisted of three subthemes. The subthemes were the physiotherapists' understanding of SMS/HTP, the conditions that led to patients successfully self-manage their pain at home, and the challenges and obstacles to the HTE as SMS relating to CLBP patients.

7.3.1.1 Subtheme 1: Understanding of self-management strategies/home treatment plan

The data showed that all six physiotherapists had a similar understanding of SMS/HTP. For example, three physiotherapists indicated that physiotherapists delivered SMS to any patients as a programme that the patients engaged with during and following the course of physiotherapy. This involved instructions and exercises that enabled the patients to deal with their pain at home.

> *"The physiotherapist prescribes for the patient a comprehensive programme, including physical exercises and instructions on how to deal with their pain at home." (PT5, p1)*

It was reported by PT (3), PT (4) and PT (6) that the education should be tailored toward individuals, including finding a medium through which they could understand the HTE.

> *"It is a programme prescribed to any patient, during the treatment course and after the completion of the course. It depends on the patient's condition. I use and present the brochures and videos to the patient to do the exercise at home. Of course, I get the videos from YouTube or from any programme I see appropriate if the patient understands the programme." (PT4, p1).*

Another two physiotherapists defined and stressed that the SMS/HTP was the patients’ responsibility to self-manage their pain by following the instructions and exercises at home. For example, PT (2) revealed that patients` responsibilities started when physiotherapists discovered what the patients complained of.

> *“…after we finish the patient assessment, we establish a treatment plan that would be carried out under the supervision of the specialist here including exercises and electrotherapy devices, and there is a plan in which the patient is committed to do it at home. I explain the correct positions that must be taken into account in their home and*

> *work, and I provide them with a home programme, such as strengthening or stretching exercises according to their need." (PT2, p1)*

7.3.1.2 Subtheme 2: Conditions for successful self-management strategies/home treatment plan

The physiotherapists highlighted four factors that influenced the success of SMS for the patients with CLBP, including the importance of educating the patients with CLBP, following patients up and facilitating patient self-care.

The first and most critical role revealed by the data was the physiotherapists' educational role. All physiotherapists showed that they acknowledged their educational role as being crucial when treating patients with CLBP. Most physiotherapists (n=4) reported that most patients referred to physiotherapy were not fully aware of their condition (as a physiotherapist working in Kuwait, I had also encountered this situation with several patients). Two physiotherapists, PT (4) and PT (5), criticised physicians for relying too much on MRI for a diagnosis without examining the patient and that could lead to the patient being wrongly diagnosed. PT (4) and PT (3) further revealed that the lack of time physicians spent with their patients was a reason why the patients had minimal information and why some patients they saw were scared. PT (6) stressed that all physiotherapists needed time to educate their patients thoroughly.

> *"Unfortunately, most patients who come here have no idea of their conditions, some patients come while they are in a panic due to what their physician has told them by relying on MRI without undertaking any accurate clinical bed examination. The physicians neither talk nor spend more time with the patients in the check-ups, which unfortunately making our task more difficult. As a result, we need more time to explain their condition, time to make the patient believe that his problem is not that serious." (PT4, p2)*

Physiotherapist believed that educating patients about the nature of CLBP and teaching techniques regarding body posture whilst carrying loads and during their daily activity is key. Four physiotherapists highlighted the importance of educating patients about their conditions, including what exactly they were suffering from and what their actual diagnoses were, during the session. PT (5) also agreed with the statement made by PT (4) and PT (6) about patients` diagnoses were mostly based on MRI.

> *"In Kuwait, the disc becomes like a scapegoat to be blamed for every spinal pain I prefer to raise the patient's awareness on his problem, explaining, for example, that your bulging disc doesn't go with your symptoms. So here, I make sure to educate the patient that his main problem is not due to the disc." (PT5, p3)*

The data suggested that the physiotherapists used several approaches to educate their patients. Two physiotherapists emphasised the importance of educating patients verbally about the nature of CLBP. Half of the physiotherapists educated their patients verbally about the importance and benefits of doing exercises for managing CLBP and completing the exercises as part of lifestyle. Three physiotherapists also noted that they ensured that the patients understood how to perform the HTE correctly before sending the patients' home and used technology to help them.

> *" I let the patient watch the video from my own computer and ask her to do the exercise in front of me, to know whether she understands the exercise and does it in the same way or not? I present to her videos for home exercises through sending the home-treatment plan via WhatsApp." (PT4, p7)*

PT (6) revealed that the reason behind why they needed to let the patients do the HTE correctly inside the clinic at the end of every session was to let the patients master the HTE before going home.

> *"If the physiotherapist insists that the patient do home exercises in front of him before he finishes his sessions once, twice and three until he has mastered the exercise in the correct manner." (PT6, p5)*

The majority (n=4) highlighted the importance of giving instructions to the CLBP patients verbally about picking up and carrying loads and their daily activities to minimise harm. On listening to the advice these participants gave to their patients for carrying loads, which is advice I did not always agree with, I documented my feelings in my research diary, reflecting on how they influenced my analysis and rapport with my participants. This is extensively discussed in the discussion chapter, section 8.4.2. For example, PT (1) and PT (3) focused more on body posture during daily activities and carrying loads. In contrast, PT (6) rejected the old concept of focusing on a particular body posture whilst carrying loads from the ground and educated her patients on bending their backs in whatever direction they wanted to move.

> *"I like to educate my patients regarding that there is no objection to bend your trunk over and pick up things. I am not with the old concept which recommends picking things up with squat. I only advise them to bend over in whichever way they like." (PT6, p1)*

The educational role of physiotherapists had numerous positive impacts on their patients. For example, one physiotherapist reported that when the patients received proper education about their problem and felt the benefit of doing exercises at home, it enhanced patients' psychological status and facilitated treatment. PT (6) added that when the patients understood the importance of doing HTE to solve their problems they were more likely take on the responsibility of self-managing their pain.

> *" I have seen many patients feel at ease after you educate them about their problem. 50% of patients have less fear of movement and treatment becomes easier when we tell him what exactly he is suffering from and why we do this exercise. If he fully understands his problem and the importance of each exercise and how they work, he will be able to deal with his problem after completing the physiotherapy course." (PT6, p3)*

One physiotherapist, PT (2), indicated that delivering a proper education to the patients enhanced the patient-physiotherapist relationship. The patients trusted their physiotherapists and felt comfortable which, in turn, led to the success of the HTE and better adherence.

> "*Reaching out to his exact problem and explain it to him is important because the patient feels comfortable and kind of trust you, and when that happened it helps to reduce treatment sessions. When patients do not know what is really going on with their back, and why these exercises prescribed this reduces the patients' adherence to home exercises." (PT2, p3)*

Further benefits were revealed by PT (5) in that the education they received from the physiotherapists about the nature of their back problem enabled them to change their behaviour and lifestyle which helped the SMS/HTP. Similarly, PT (3) stated that the patients would be responsible for self-managing their pain once they had received sufficient education about their condition.

> *" When the patient is fully aware of his condition, he will be independent in treating himself. For example, the patient knew that sitting for a long time aggravates his lower back pain, so the patient automatically stands after sitting for a long time."* (*PT3, p2)*

The second role revealed was following up the patients and various methods were used including technology (WhatsApp and Telehealth), phone calls, and face-to-face visits. Although the literature highlights the importance of follow up appointments with patients with CLBP, physiotherapists providing their private telephone numbers to patients appeared to be crossing a boundary of a professional and one that felt deeply uncomfortable to me and this was noted in my reflexive diary. Most physiotherapists (N=5) reported the importance of following up their CLBP patients after discharge to enhance outcomes. For instance, two physiotherapists reported that setting a follow-up appointment with the patients indirectly helped the patients avoid becoming anxious whilst they were self-managing at home as this acted as reassurance. PT (6) further stated that the CLBP patients were like patients with other chronic diseases, e.g. diabetes, which needed follow ups.

> *"I set a follow-up meeting a month after the end of the physiotherapy sessions so the patient is reassured that I will see her so if he feels pain or if is not sure about doing a specific exercise, all what he has to do is to communicate with us through WhatsApp, he can communicate with us quickly and easily." (PT6, p3)*

> *"I make the patients feel reassured through notifying them to contact me, when required you can send a message on WhatsApp and we will solve the problem together. Or she can visit me here in the clinic, as the patient prefers." (PT4, p5)*

In contrast to PT (4) and PT (6), who set regular follow-up times with their patient’s post-physiotherapy discharge, PT (2) and PT (5) ensured that their patients did their best to self-manage their pain and they requested that their patients did not contact them unless they really needed help, such as failing to self-manage the pain. PT (5) further added that it was the physiotherapists' duty to let their patients attain better control of their pain and to rely on themselves.

> *" I have to provide my patients with my e-mail or WhatsApp to contact me only when they fail to deal with the pain at home.” (PT5, p4)*

Follow ups with the patients permitted the physiotherapists to observe any specific changes in status, such as indications of serious pathology for example, thus allowing the physiotherapist to act quickly and refer as appropriate.

> *"When I doubt that any patient has a serious problem such as the Red Flag, then I ask him to come to the clinic and/ or consult her doctor immediately." (PT6, p2,7)*

The third physiotherapists' role in the success of the SMS/HTP was facilitating self-care for the patients often achieved through goal setting. The most important thing to be considered, according to PT (1), was to reach the patients' aims regardless of what kind of treatment provided.

> *"These exercises aim to make them able to take care of their problems by setting goals that we want the patient to achieve, through certain techniques used in home or electrical devices such as TENS, or hot or cold packs, in addition to teaching the patient various positions to reduce pain which can be performed at home." (PT1, p1)*

The data further suggested that the physiotherapists should empower their patients through motivation, which was considered an essential role in facilitating self-care, as reported by five physiotherapists.

> *"…the more encouragement the therapist will give on the necessity of home exercises and that the patient is able to perform them properly, the more incentive will be and then the success of the home treatment plan." (PT1, p1)*

Three physiotherapists indicated that increasing the patients' self-confidence was a crucial role, that enabled the patients to use self-care successfully to treat their pain. PT (3) stated that the patients reached a higher self-confidence when the physiotherapists gave them a motivational speech. This meant that they could tackle their pain and be able to self-manage independently at home. PT (3) further reported that patients had to know that the physiotherapists would guide them to help them be responsible for self-managing their pain and this was enhanced with a positive patient-physiotherapist relationship.

> *"Making the patient confident in himself that he can overcome his pain and do exercises alone, … the patient puts his trust in you if you give him necessary attention and reassure him that his condition will improve." (PT3, p2,3)*

Involving patients in the treatment plan was considered a facilitative self-care role that the physiotherapists should embrace, as it could enhance the success of the SMS/HTP. PT (6) reported that the patients could be involved in the treatment by considering their preferred exercises and assigning them easy tasks to do at home to enable them to become part of the treatment.

> *"you make him feel that you respected her desire, …this is an important psychological factor to show the patient that I respect your desire and make him involved in the treatment,…I like to give my patients a straightforward task that they do at home so that I subconsciously let them be involved in the education." (PT6, p3,6).*

7.3.1.3 Subtheme 3: Challenges to the home treatment exercises as self-management strategies for chronic low back pain

This subtheme referred to the factors that made the delivery of the HTE more challenging for physiotherapists and these were misleading advice given to the patients, the patients' educational levels, and patients with co-morbidities.

A key challenge was that the patients could be given incorrect advice either about their condition or the best treatment for them. One physiotherapist reported that misleading advice and incorrect recommendations given to the patients had negative effects, for example advice given when socialising with their friends in Diwaniyah, i.e. a gathering place inside a home where Kuwaiti people meet and talk on a frequent basis. Unfortunately, some healthcare members could have also lead patients to believe that electrotherapy is an optimal solution to their back pain. Thus, other physiotherapists might potentially have difficulty convincing the patients about the lack of evidence for the usefulness of electrotherapy and the difficulties associated with changing their beliefs about the importance of doing the HTE.

> *"Sometimes patients have misleading or incomplete treatment from a physician, pharmacist, physiotherapist, or by talking in Diwaniyah with friends, the problem we encounter here in Kuwait is that the patient believes that electrotherapy is the basis of physiotherapy, no matter what I educate them that electrotherapy is ineffective they will never listen to me, as it basically he or she does not want anything but electrotherapy….Here, I reach an agreement with the patient, whereby I say I will give you what you ask for, but I also want you to promise me that you adhere to the home treatment plan during and upon completion of the course of treatment ." (PT6, p2)*

Two physiotherapists indicated that physiotherapists might give challenging HTE as they prescribe too many exercise that may be considered too time consuming. PT (5) underpinned the importance of giving the patients functional exercises, instead of too many exercises. In contrast, PT (6) suggested scheduling the exercises on multiple days is beneficial.

> *"some physiotherapists prescribe home exercises for each muscle separately such as hamstring, quadriceps as home exercises supporting the back,… It is possible to prescribe one exercise in which all muscles are engaged, and this exercise is a squat. Doing a lot of exercises may take a lot of patient's time. Thus, the patient may then get bored." (PT5, p4)*

> *"Some physiotherapists give many exercises to patients, which makes patients confused, so I schedule these exercises on different days, such as Sunday two core muscles exercises, on Monday strengthening exercises for the lower back and on Tuesday a fast walk only, so here without making the patient feel bored while he performs exercises as a part of his lifestyle." (PT6, p4)*

Two out of six physiotherapists highlighted the impact of co-morbidities on the ability to complete exercises, such as obesity and poor balance. Patients' educational level was also considered a challenge to SMS especially if patients had a low level of education. For example, two physiotherapists reported that the patients may not fully appreciate the complete picture of CLBP and understand how the HTE is important for their pain. In turn, they are likely to show less responsibility when self-managing their pain.

> *"I think that the well-educated patients when I informed them of their problem and the ways to solve it, will understand and get it more than the non-educated,…I think that it can be difficult for the uneducated to understand completely the matter. The responsibilities of the uneducated to do the exercise will be less than the well-educated." (PT4, p3)*

7.3.2 Theme (2): Patient assessment and the home exercise programme plan

This theme presented the physiotherapists' opinion of screening the patients to establish how the HTE as SMS could be tailored to the PAS and the PPS, and what strategies the physiotherapists used to manage pain flare-ups.in both groups.

7.3.2.1 Subtheme 1: Screening patients' coping response strategies

The data revealed that the patients' CS were only considered by two physiotherapists during the patient assessment. The other four physiotherapists reported that neither the patients' coping style was considered nor did they amend the patient assessment.

> *“I just do a thorough assessment to each patient,…I don’t modify the assessment I just like to deliver the full assessment to everyone.” (PT2, p3).*

Nevertheless, two physiotherapists, PT (4) and PT (6), reported that they took the patients’ CS into account. PT (6) was the only one who modified the assessment into something shorter when she established that they presented with depression or a fear of movement.

> *"if I see a patient who is depressed or barely moving, I try not to delve too much into his problems so as not to make him too attached to me, for here I only do a quick screening if the patient complains of any kind of problem." (PT6, p7).*

No physiotherapist used specific tools or questionnaires to discover what CS patients used. Five of the six physiotherapists explained that their expertise had enabled them to establish what CS the patients’ used, through talking with the patients and by observing their behaviour and facial expressions. They felt this could give a clear idea when any patient had depression, frustration or anxiety. I remembered being surprised when I heard this information from the first physiotherapist because I had never been able to discover patients' CS through my own experience. When I finished interviewing the six physiotherapists, I thought I might not have enough experience yet to screen patients as they do. PT (4) reported spending more time talking to the patient getting a good picture about the patients’ CS and this was preferable to using questionnaires. PT (3) further indicated that when the patients appeared hesitant about doing exercises at home and wanted to do the HTE under their physiotherapists' supervision, it meant that they had low self-confidence.

> *"…by talking with the patient and through practical experience, I find that the patient has despair, anxiety, or depression. I can notice his facial expressions and behaviour. Also, I can discover from his words, for example, by saying "I am tired of living in this world or I cannot control the pain,… I can discover if I find him hesitant or find himself asking you if he is going to do the exercises during the session, so logically because he is not confident to do it at home alone."(PT3, p4)*

7.3.2.2 Subtheme 2: Considerations prior to setting self-management strategies/home treatment plan

The data suggested that the physiotherapists' prescription of exercises as SMS/HTP should not be generic to all patients but based on their condition and assessment data. PT (1) reported that generic exercises could exacerbate symptoms in some patients.

> *"We need to assess the patients before giving him any home exercises, for example, I know I have to give light exercises for patient with high blood pressure because I already knew the patient has problems and YouTube doesn't, so this patient may perform many exercises that might worsen his blood pressure condition before decreasing his pain." (PT1, p4)*

These considerations also included the physiotherapists' perceptions of the patient preferences regarding active or passive SMS. The data revealed that the majority (n=4) respected the patients' preferences for certain active SMS/HTP, and they were flexible when it came to altering the HTE according to what exercises the patients preferred to do at home. The patients' preferences were seen as needing to be respected.

> *"I have seen a few in Kuwait who prefer a certain treatment over another. Some patients suffering from obesity, severe flatulence and having chronic back pain face severe difficulty in doing exercises lying on the stomach,… I have to find another comfortable position Also, there are patients with back pain who suffer from other problems, such as in the knee, I have to make him doing exercises here in front of me, and if I find that an exercise causes a severe knee pain or the patient does not like it, then I have to replace it with another suitable exercise according to the patient's choice." (PT3, p4)*

PT (6) reported that respecting the patients' choices of HTE was essential as it increased their motivation level and centred them in the SMS/HTP, thus, indirectly showing the patients that they respected their choice. In contrast, considering the patients preferences and feedback on the active treatment was dismissed by two physiotherapists who explained that they decided what sort of exercises the patients required. PT (1) reported that the patients' knowledge when it came to self-manage their pain was limited compared to the physiotherapists, and most of the patients did not realise what exercises were best for them. At the beginning of my interviewing journey with physiotherapists, I was not able to decide if the two physiotherapists were right in not taking patients' preferences into account until I read literature about patients' preferences, then my perception had changed.

> *" after taking the assessment for the patient and identifying the main problem of his back,… I am evaluating what he really needs, whether he needs stretching or strengthening exercises. When I explain to the patient, for example, that you need stretching exercises for your back muscles and that muscle spasm is the cause of your pain and when he is satisfied with the explanation and the goal of the given exercise. For this reason, I don't take patients` preferences because I know what is best for him." (PT2, p2)*

> *" patients are given exercises that I think are suitable for them, because most patients do not have a sufficient idea of what exactly they need, or rather they are not aware of the things that suit them, so the exercises that must be performed are from me, the physiotherapist." (PT1, p2)*

Regarding the physiotherapists’ perceptions of the patients’ preferences when using passive CS treatment, such as electrotherapy as SMS/HTP, three physiotherapists did not mind if their patients used passive treatment at home in addition to their adherence to the required HTE. For example, PT (5) reported that she already knew that electrotherapy only masked the pain for CLBP. She stated that the patients should be cautious whilst using electrotherapy and not rely only on the passive treatment, but to use it in combination with the HTE and being active.

> *"I know that the electrotherapy has no treatment effect, but placebo effect. But I have no problem if the patient prefers to use electrotherapy at home, as long she undertakes the home treatment plan." (PT5, p6)*

However, one physiotherapist, PT (4), was inflexible regarding the patients’ preferences with respect to using electrotherapy as SMS/HTP. She indicated that as the patients had a chronic condition, they needed to be educated about the inappropriateness of electrotherapy as a treatment for CLBP. The physiotherapist wanted their patients to change their behaviours and accept the HTE as part of their lifestyle.

> *"I neither use nor prefer electrotherapy to be used by the patient at home,…I persuade the patient that the electrotherapy is not suitable for the problem, I would like to make the patient realise that his current condition is chronic and require him to change the*

> *nature of his life and the home exercises should be practised as if they are a part of your life." (PT4, p2,5)*

> *"The patient should have an idea that without performing home exercises, your condition will never improve as exercises relieve pain in the long term, unlike electrotherapy devices." (PT3, p3)*

7.3.2.3 Subtheme 3: Tailoring the home treatment exercise programme for people with chronic low back pain.

When the physiotherapists were asked whether the HTE presented would be modified if they knew patients had different coping strategies most physiotherapists (n=5) said they would. Interestingly, they had already reported beforehand that they did not consider the patients` CS. PT (1) was the only physiotherapist who saw that the PPS needed more care and thus gave the same HTE programme to both groups.

7.3.2.3.1 Tailoring the home treatment exercises as self-management strategies for people who mainly adopted active coping strategies

The data revealed that only one physiotherapist, PT (6), reported that the progression of the HTE needed to develop at a faster rate for PAS than for the PPS. In addition, numerous and thorough HTE were prescribed by the physiotherapists for PAS with CLBP, as reported by half of the physiotherapists. PT (5) indicated that the PAS could be given the HTE directly without any specific cautions. PT (4) stated that the exercise number would be greater for the PAS.

> *" Yes, I can present a more comprehensive and diverse home treatment plan with more exercises for the patients who I feel that they are actively coping with the pain." (PT4, p5)*

7.3.2.3.2 Tailoring the home treatment exercises as self-management strategies for people who mainly adopted passive coping strategies

The data suggested that the people with PPS needed a different programme compared to the PAS, such as building rapport between physiotherapists and the patients. This was reported by three physiotherapists as essential for the PPS patients. For example, PT (4) highlighted the importance of communication, to listen and explore their problems in depth, which in turn, helped them when doing SMS.

> *"I give one hour in the first session to each patient, so that I can know everything about him, listen io him well and try to dig together to the depth of his problem. Since we figure out the problem, the patient opens up to me. Of course, being nice to the patient and speaking in a good manner is very important to improve and reduce*

> *the patient's depression and life pressure placed on him. At the beginning, I focus more on the psychological aspect" (PT4, p4)*

However, the data from PT (6) contrasted with the opinions mentioned by PT (4) regarding the need for an in-depth exploration of the patients’ problems. For example, PT (6) recommended not delving into the patients’ psychological issues. I captured my perception regarding this in my diary, being aware of my contrary opinion. She explained that by doing this, as well as delivering a passive treatment, they relied more on the physiotherapists.

> "*In case of the passive type, I try to reduce as much as possible from doing manual therapy or passive therapy in order not to make him rely on me too much." (PT6, p7)*

Two physiotherapists suggested that caution should be used whilst dealing with the PPS patients. They needed to feel that they were receiving extra care and attention. PT (6) added that physiotherapists should show them that there was nothing to be worried about and to reassure them that everything was going to be fine. In addition to the importance of building rapport between the physiotherapists and patients, the findings also suggested that the patients with PPS needed to be encouraged and motivated by their physiotherapists as reported by one physiotherapist. Moreover, half of the physiotherapists recommended that the patients needed to be properly educated by their physiotherapists about their issues. For example, PT (4) stated that the patients should be totally aware of their condition.

> *" patients with passive coping style should be educated on their problem and all their enquires must be answered in order to be fully aware of their problem." (PT4, p5)*

Similarly, PT (5) further added the importance of raising the PPS’ awareness about how exercise therapy for CLBP was proven to be better than the use of medication in the long term. Advice was also given to them to help them to set a plan with their physician to reduce medication intake.

> *" I can educate the patient on the future risk of using drugs and advise her to go to her physician in order to develop a plan for her to get rid of the drugs gradually. The exercises are proven to be better than the drugs for the treatment of chronic back pain with no future problems." (PT5, p7)*

With regards to the HTE programme details only PT (6) highlighted the importance of educating the PPS about the complete details related to the HTE, which involved the benefits and progression of each exercise and that the physiotherapist had to make sure that the patients understood every detail. Regarding the type of exercise given, one physiotherapist, PT (4), stated that although the PAS and the PPS were given a similar exercise programme, the difference was the number of HTE, e.g. less exercises for the PPS. Similar responses were obtained from another three physiotherapists regarding the number of HTE. They reported that the PPS needed both fewer and simpler exercises at the beginning of the programme. The exercises were then gradually increased until they were familiar with them. For instance, PT (2) and PT (3) stated that a HTE programme with two exercises would be enough, whilst PT (6) had no problem if the patients only used one exercise as a starting point. PT (3) illustrated that giving too many HTE would make them bored and lead to the failure of the SMS.

> *"Regarding the patients with passive coping, I believe, in my opinion, that I used to present the same programme presented to the patients with active coping. In term of exercises, the number of exercises will be fewer in order to get them used to such exercise and show them that the problem is easily solved. And then, I increase the exercises gradually." (PT4, p5).*

PT (5) disagreed with PT (4) about the idea of providing the exact same content in terms of exercises for both groups. She stated that the PPS needed to be given a gradual loading and graded exposure exercise technique. She illustrated that these kinds of HTE would help them slowly engage with the HTE programme and reduce their fear.

> *"I use the graded loading and graded exposure with the passive coper, the passive coper maybe have fear from the exercise and severe pain during the movement. Thus, we load the joints gradually, make a graded exposure, and educate the patient." (PT5, p6)*

Regarding the progression of the HTE, the data revealed that the intensity of the exercises should progress gradually for the PPS, as indicated by two physiotherapists.

> *"I gradually increase the number and intensity of the exercises. In short, I try as much as possible to make the patient beneficiary and*

> *committed to treatment. Then, I gradually increase the number and intensity of the exercises." (PT3, p5)*

7.3.2.3.3 Managing pain flare-up post-physiotherapy discharge

The data also highlighted another important issue related to pain-flare up management during SMS/HTP, with flares considered to be common for people with CLBP by four physiotherapists. To manage any pain flare-ups three out of six physiotherapists reported that the first step was to educate the patients that the pain could increase at any point due to the nature of CLBP. PT (5) further explained that this pain might be due to the overactivity of the central nervous system, and that the patients should be advised not to pay any attention to it. PT (1), PT (3) and PT (5) indicated that the patients needed to be reassured and not be worried about the pain, as this was deemed to be normal.

> *"If the patient feels that the pain gets flared up through a little movement such as kneeling or carrying anything, he should know that it is normal and should be advised not to pay any attention to it,…one of the most important thing I am keen on during the last physiotherapy session is to explain to the patient that your pain may be increased because the pain in your case may be caused by the central nerve system becomes sensitive to the pain, not due to a problem in the back that you have to worry about . It is normal to feel pain while doing a movement as the central nervous system sends a lot of signs to the brain and this is normal pain." (PT5, p7)*

> *"In the beginning, I have to educate the patient and reassure him with telling him that pain normally may flare-up in those who suffer from chronic pain in the lower back." (PT3, p5)*

Most physiotherapists (n=4) reported that another important step was to investigate what caused the pain flare-up prior to setting a plan for the patients to deal with it. PT (6) illustrated that knowing what was causing the pain flare-up would better guide the physiotherapists when setting a SMS/HTP.

> *"I think if the cause of the irritation is known, then we will be able to set exercises or advice that would suit the patient, so here the advice is to do the exercises and ask him politely to stick with them." (PT6, p8)*

Five out of six physiotherapists changed the SMS/HTP programme that they had already set for their patients when they discovered new pain or a new problem. For example, PT (2) instructed their patients to use a hot pack and stretching exercises when he had back muscle spasms causing a flare-up of the pain. PT (6) reduced the number of the exercises when she suspected that the patients’ body could not tolerate the original number of HTE. In contrast, PT (5) was the only physiotherapist who would not change any part of the SMS/HTP when a pain flare-up occurred. She had demonstrated previously that pain flare-ups were a normal sign for people with CLBP.

> *"If there is nothing new happening to him like no muscle spasms, then usually I will stick to the same given treatment plan, because flare-up as you know, is the nature of CLBP , but if something new happens, the focus will be on what made his pain flare-up again, If it is a muscle spasm, I will advise stretching exercises and hot back to him, and if his body posture is the cause, I will teach and guide him again." (PT2, p4)*

There were conflicting responses from the physiotherapists regarding whether during a pain flare the plan for the HTE was the same for the PAS and the PPS. Two physiotherapists indicated that there were no differences between the groups and PT (3) explained that all patients were guided to adopt postures that would relieve their pain. In contrast, two physiotherapists reported that both groups would be provided different HTE and according to the patients' conditions, suitable exercises would be prescribed. For instance, PT (6) indicated that the first step was to ensure that no red flags were present for all patients. The PAS group was given exercises according to what was increasing their pain. Regarding the PPS, she notes that psychological factors can be influential.

> *"I will make sure that they are clear of red flags to ensure the safety of the patient. Copers are self-confident, and they trust me as a physiotherapist when their pain is irritated, they are not afraid of movement, do not overthink about the pain so when I examine this group and discover the cause of the irritation, I will give them exercises and advice that matches their flare-up. As for the Passive Coper, when they have a flare-up, it is possible that they react passively as they get depressed and frustrated because the pain was mild at the beginning of the PT course and they were happy, then the pain increased after they have discharged. Hence, their psychological problems could also increase, such as fear of movement and fear of doing exercises that can also increase the pain flare-up more than what was before. I will not take a risk with this type, and I will suffice with telling them to see their doctor immediately." (PT6, p8)*

7.4 Summary

Two main themes emerged from the Physiotherapist data which played a critical part in physiotherapists` perceptions of SMS and patients` CS. The physiotherapists acknowledged the importance of the SMS to support patients with CLBP, and the roles that they had to support the patients the SMS. These included the physiotherapists’ educational role, following up the patients, facilitating patient-centred care and increasing patients’ self-confidence through motivation. However, challenges to the implementation of the SMS were linked to misleading advice being given to the patients, the patients’ educational levels, and the patients with co-morbidities. Most of the physiotherapists were not considering which CS were adopted by the patients when they assessed patients and felt that their expertise and feelings were adequate rather than using a valid tool for screening patients’ CS. From most physiotherapists` perspectives the HTP/SMS should be based on patients’ assessments and patients’ preferences. It was felt that the PAS patients could be provided with numerous HTE with a faster progression rate. However, the SMS/HTP was proposed to be tailored differently for the PPS patients, such as building a strong rapport between physiotherapists and the patients, providing them with extra care, reassurance, motivation, and education covering all the details of each HTE. The HTE for the PPS should commence with fewer exercises and be progressed slowly and given as gradual loading and graded exercises.

Physiotherapists suggested advising patients to ignore the pain and reassured them when they had a pain flare-up. Most physiotherapists would change the SMS/HTP when patients presented with a new pain, some would reduce the HTE numbers, whereas one Physiotherapist would not change anything. A few physiotherapists would give the same SMS for both the PAS and the PPS group when they had a pain flare-up, whilst some suggested that the SMS would be different and tailored according to individual patients’ conditions.

Chapter 8: Discussion

8.1 Introduction

SMS is seen as the ability of individuals to be responsible for managing their health, changing their behaviour and lifestyle as necessary, managing related cultural and psychosocial aspects, and being aware of the spiritual consequences of health with the support of healthcare professionals, their family and the community (Wilkinson and Whitehead 2009). Although numerous guidelines recommend and support SMS for CLBP patients (NICE 2016), not all SMS studies in Kuwait and western cultures studied how the CS responses of CLBP patients could influence SMS outcomes in the context of physiotherapy. The literature review discusses that the adoption of active CS eventually leads to less pain, reduced depression and improved functional impairment (Kraaimaat and Evers 2003; Bussing et al. 2010). This approach appears not to be associated with an increase recurrent episode of LBP (Mercado et al. 2005; Jones et al. 2006) nor increased pain severity in people with CLBP (Carroll et al. 2002).

However, those people with CLBP who adopt passive CS are associated with higher pain levels (Carroll et al. 2002), higher psychopathology post-treatment (Spinhoven and Linssen 1991; McCracken and Eccleston 2003), greater pain and a higher level of disability, are less active and have a poorer work status when using diverting attention, and praying or hoping strategies frequently (McCracken and Eccleston 2003). Furthermore, they are at high risk of having persistent disabling LBP (Mercado et al. 2005; Jones et al. 2006). In addition, adopting praying and hopelessness, or helplessness (catastrophising) are seen as predictors of functional disability and emotional distress, respectively (Koleck et al. 2006), with distraction and praying or hoping found to be more prognostic of pain and disability, heightened pain and disability (Woby et al. 2005), and increased lumbar muscle activity (Hulst 2010). Thus, this novel study aimed to explore patients` CS and SMS in the context of CLBP in Kuwait, and physiotherapists` perspectives of CS and SMS in patients with CLBP in Kuwait.

This study had two mains and one secondary aim. The main aims were to explore patients` CS and their perceptions of SMS in the specific cultural context of Kuwait. In addition, to explore physiotherapists' perceptions of the patients` CS and SMS at discharge following physiotherapy. The secondary aim was to observe the patients changes in PROMS between pre- and post-physiotherapy treatment. Furthermore, to use the qualitative data to provide provisional data of patient characteristics to illustrate the concept of a proposed process that could categorise patients as PAS and PPS. The qualitative data helped in exploring and explaining the quantitative data. Moreover, it helped with exploring and obtaining a deeper understanding from CLBP patients in the specific cultural context of Kuwait with respect to pain, CS and SMS.

This chapter discusses the key findings that emerged from the quantitative and qualitative data with reference to the literature, how the findings can be implemented for use in practice, study limitations, contribution to the current body of knowledge, and suggestions for future research.

8.2 Patient characteristics and their coping response strategies in the context of self-management

8.2.1 Patient characteristics

Patients` characteristics including their level of self-confidence, individual responsibility for SMS, trust and belief in physiotherapists were gathered in the qualitative data. These characteristics are probably not attributed to chronicity, as minimal differences were reported by patients from the two groups; therefore, linking chronicity to patients` characteristics would be speculative and would require a larger sample of patients.

Patients’ self-efficacy including self-confidence to maintain activities such as exercise, was measured using the PSEQ pre- and post-physiotherapy. In this study, all the PAS group scored high in PSEQ total score (40 and above) pre- and post-physiotherapy treatment. From the qualitative data, all the PAS group post-treatment accepted responsibility for self-managing their pain using the HTE, and engaging in physical activities, such as walking, and maintaining their habits and hobbies despite the pain. Maintaining exercises was illustrated by two of the PAS group as they were satisfied with the outcomes of pain reduction by doing the exercises. This might be one reason why most of the PAS group believed and trusted in the SMS given to them by their physiotherapists. Frost et al. (1995) and Nicholas (2007), demonstrated that high self-efficacy amongst the patients measured by PSEQ, expects that these patients react well to an exercise programme and these activities were expected to be maintained.

In this study, the PAS group scored high on PSEQ Q7 “I can cope with my pain without medication” pre- and post-physiotherapy sessions, except for PAS (4), whose confidence was reduced by half post-physiotherapy. The qualitative data showed that PAS (4) only used aquatic exercises as a CS to manage her CLBP and did not use medications except when necessary. However, due to restrictions imposed by the Kuwaiti Government authority during the pandemic, there were no aquatic facilities available. Therefore, this might be the reason for her reduced confidence in coping without medication, however, this is speculative. The qualitative data showed that most of the PAS group relied less on medication as a CS for pain and used HTE and similar activities as strategies post-physiotherapy sessions. This could be because the HTE was effective for them at producing good results, therefore they used less passive CS, such as medication. This concurs with the findings by Nicholas et al. (1992), that patients reported reducing their use of medication when they used more active CS and their self-efficacy increased. Two patients from the PAS group found that taking medication was something which they did only when the HTE failed to relieve their severe pain.

Another reason could be that most of the PAS group reported they received social support and family support in particular, which helped them do the HTE at home. Social support can be viewed as the interactions with others and the resources that support people to cope with problems, and when support is lacking, people may be less inclined to complete their HTE (Masters et al 2007). In this study, most patients from the PAS group reported that their family supported them to do HTE. In contrast, none of the patients from the PPS group reported such support, however, they emphasised the positive effect of socialising with their family on their emotional well-being, which enabled them to cope better with the pain. One patient from the PPS group explained that the positive effect of being with her family only occurred when using medication, and another PPS patient reported that being with her family helped reduce the pain only when the pain intensity was mild.

The families of both groups, as discussed in the previous paragraph, supported their members who were in pain. This is in line with the role of family in Islam, where Allah asks Muslims to offer help to those who are suffering as act of mutual cooperation (Masters et al. 2007). The role of family in Islam is key and is considered as the essential caring institute in the community, supporting and maintaining emotional wellbeing, and socialisation (Salleh et al. 2009). Thus, emotional support includes attachment to family, reassurance, and the feeling that one is accepted and loved (Masters et al. 2007). According to Oraison and Kennedy (2021), good social support can contribute to better mental stability in facing illness, promoting active CS (e.g. the patient becomes more able to accept the illness and increases socialising) which, in turn, improves patients' adaptation to chronic pain. One role of the Arabic family is to provide care for persons with disabilities or illness (Farsoun 2004), such as visiting people who needs support as dedicated by the Islamic, customs and traditions (Zogby 2002) and urged by the prophet (PBUH) (Khan 1990). Thus, Islamic teachings and Arabic traditions unites Kuwaiti people, which would include people with CLBP, as religion was defined as a social organization in which people participate in a group for support (Dedeli and Kaptan 2013).

Data from Western countries also support the role of family and socialising for people with CLBP as Slade et al. (2009), reported that all patients agreed that family support was an essential factor in carrying out the HTE programme. In addition, McKillop et al. (2017) reported that patients with CLBP in Canada who reported high social support, had a lower chance of experiencing anxiety and depression.

The PPS group scored low in the PSEQ pre-physiotherapy sessions, which remained unchanged in four of the PPS group post-physiotherapy sessions. The qualitative data showed that the same four PPS did not rely on exercises for pain relief and reported being less physically active compared to the PAS group. Four PPS patients reported that they did not have enough self-confidence to self-manage their pain with the HTE at home and relied on their physiotherapists to support them. This concurs with findings by Campbell et al. (2001), that poor adherence to HTE was linked to low self-efficacy and in addition high anxiety and depression levels. This could be a reason why most of the PPS heavily relied on their healthcare providers and perhaps on medication. This finding is in accordance with the results found in other self-efficacy studies (Campbell et al. 2001; Nicholas 2007; Ferrari et al. 2019) regarding how high and low self-efficacy predict the level of engaging in exercises and activities.

Nicholas (2007) and Ferrari et al. (2019) showed that patients with low self-efficacy scores in PSEQ required pain relief before engaging in an exercise programme and

Ferrari et al. (2019) indicated that CLBP patients with low self-efficacy used more medications compared to those with high self-efficacy. The qualitative findings of this study show that most of the PPS patients had low confidence to perform HTE, and most reported that exercises did not relieve their pain. Therefore, they may have been more inclined to use alternative strategies, such as medication; however, this is speculative.

Low self-confidence in taking responsibility for self-managing in the PPS group might result from an HTE that does not achieve patient expectations including pain reduction. For example, some patients from the PPS group reported that the HTE did not reduce their pain and were dissatisfied with the SMS, which may reduce their confidence to engage with the exercises. According to Verbeek et al. (2004), in a systematic review on LBP patients, satisfaction with treatment is key to success, which would include patients' being positive about the given treatment or treatment outcome. The review revealed that when patients were dissatisfied with the treatment and its outcome, such as pain relief, sharing information, performing a physical examination, being involved in decision making, respect and understanding, they would seek care from different providers. Thus, low self-confidence and dissatisfaction with the given treatment in some of the PPS patients in this study, could be a reason for patients not taking responsibility for self-managing the pain. Instead, they pass responsibility onto the physiotherapist to supervise their exercises and to apply passive treatments. Beinart et al. (2013) showed that poor therapeutic outcomes could also be linked to poor adherence to SMS. This concurs with the results noted by Krein et al. (2007) that low self-efficacy was linked to difficulty in following SMS and performing specific exercises.

A further possible reason for the PPS group not showing high self-confidence was illustrated when two of the PPS group reported they were not sure if they were doing the exercises correctly at home and thus did not feel confident in complying with the HTE. However, qualitative data from three physiotherapists in this study noted that they ensured the patients understood how to correctly perform the HTE before sending them home. Qualitative data from Slade et al. (2009) found that CLBP patients clearly showed that they wanted their physiotherapists to observe and to provide feedback on the exercises when they were not sure how to do them. Kuukkanen et al. (2007) argued that patients being guided by their physiotherapists can be achieved by setting frequent follow-up sessions. Qualitative data from four physiotherapists in this study further support this notion, indicating that it is key to establish regular follow-ups with CLBP patients' post-physiotherapy discharge to ensure that they make optimal efforts to self-manage their pain and to provide reassurance. This approach gives patients confidence over time and may be essential to motivate patients and to increase their level of adherence to HTE (Kuukkanen et al. 2007).

8.2.2 Catastrophising as a coping strategy

Catastrophic thoughts have been referred to as elements of helplessness and pessimism (Sullivan et al. 2001) and could be regarded as a passive CS (Turner and Clancy 1986; McCracken and Eccleston 2003; Vuuren et al. 2006; Hulst et al. 2010). These characteristics demonstrated in the quantitative data of this study, were seen in most of the PPS group pre- and post-physiotherapy sessions. From the PCSQ, the catastrophising subscale was found to be the second most passive CS used by the PPS group. In addition, the PPS group reported a higher mean score on the 'catastrophising' subscale, which was twice as high as in the PAS group, pre- and post-physiotherapy sessions.

In the qualitative data some PPS patients reported catastrophic behaviour by believing that doing HTE or certain activities exacerbated their pain. This indicates that some of the PPS group had higher catastrophic thoughts and coped passively by avoiding HTE. This may be one reason why they show less confidence in doing the HTE. Vlaeyen and Linton (2000) and Ramond et al. (2011) reported that some patients have catastrophic thoughts about threat and fear relating to pain from certain activities, which leads the individuals to being afraid of pain and avoiding activities that may increase pain. This can result in neglecting physical tasks, leading to deconditioning and poor functional performance (Rainville et al. 2011; Vlaeyen and Linton 2012). Kovacs et al. (2012) noted that catastrophising increased in some patients when pain increased and when attempts failed to resolve their CLBP. Qualitative data from Bunzli et al. (2017) and experimental data from Karran et al. (2018) further added that the fear of certain behaviours could be influenced by the uncertainty of the diagnosis, perceived threats from radiological reports coupled with clinical negative advice (explicit or implicit), during treatment sessions, as well as contradictory advice from several clinicians and beliefs about the body's structural weakness. Hence, catastrophic thoughts that the PPS reported in this study might have been present before the start of physiotherapy, as indicated by their quantitative score on catastrophising subscale. These catastrophic thoughts could lead to distress and fear-avoidance (Ramond et al. 2011), and treatment resistance due to lack of patient motivation (Jensen et al. 2003). One Physiotherapist reported that gradual exposing can be used as technique for HTE for patients who exhibits fear of doing exercises and movement. This concurs with the strategies that reported by Vlaeyen and Linton (2000); Rainville et al. (2011); Vlaeyen and Linton (2012), which include exposing patients to their feared tasks and movements that they have avoided, as this may reduce their catastrophic thoughts and potentially lower the intensity of chronic pain. Slade et al. (2009) reported that patients with CLBP all preferred to be supervised by their physiotherapists due to the associated motivation and the achievement of an accurate exercise technique and this was reported in the qualitative data of most of the PPS group. Thus, the physiotherapists' motivational role may be key for this group as it can increase patient self-confidence and reduce their catastrophic fear of doing exercises, and this motivational role was demonstrated in the qualitative data from most of the physiotherapists in this study.

8.2.3 Religion: Praying and hoping as a coping strategy

Praying and hoping have been conceptualised as a passive CS, being based on the involvement of an outside source to take responsibility from patients to manage pain (Mercado et al. 2000). Several Western studies concluded that praying and hoping was a passive CS and a predictor of functional disability and emotional distress in patients with CLBP (Koleck et al. 2006). Praying and hoping can also be a prognostic factor related to higher pain intensity (Woby et al. 2005), and can lead to higher levels of disability, being less active and poorer work status in people with CLBP (McCracken and Eccleston, 2003). In contrast, praying to God for support has been described as a positive CS that can support individuals to accept and adjust to illness, or as a means to distract thoughts, and seeking strength before starting a change (Andersson 2008; Bussing et al. 2010). These differences may be cultural but would need to be explored further.

Ramond et al. (2011) also argued that some praying items from the PCSQ do not share the same meanings across the world and it is not accurate to infer identical concepts across a range of different cultures and religions. The present study was conducted in Kuwait, and the case may be different for Kuwaiti Arab Muslim nation compared to other nations. Thus, to better understand the data of the current study, the importance of Islam as a religion and Arabic culture in Kuwait is referred to. As noted previously, Islam is the official religion in Kuwait with the majority of Kuwaiti citizens and non-citizens embracing Islam, and it is the main source of legislation in addition to the constitution (Casey 2019). Prayer is the second pillar of Islamic belief, and Muslims are actively religious, performing prayers at least five times a day (Ahmad 2001), compared to other religions, such as Christianity and Judaism, where prayers are usually performed less frequently (Koenig and Al Shohaib 2014). In addition, Muslims also do “prayer of need” which is performed in times of difficulties for seeking solutions (Javaheri 2006), and ‘‘remembrance’’ to show remembrance of Allah in one’s heart, through recitation and chanting (Hamdan 2010). This remembrance CS was frequently reported by CLBP patients in the study by Maki et el. (2019) and was used when the patients were in pain or emotional distress.

Praying to God was reported by Dezutter et al. (2011) and Lysne and Wachholtz (2011) to be performed more frequently by people experiencing severe pain. Prayer is proposed to influence people to adopt more healthier lifestyles, such as less smoking and alcoholism, can be associated with lower rates of depression and stress, increased optimism and hope, and improved social connections (Chamsi-Pasha and Chamsi-Pasha 2021). However, in this study, it can be seen from the quantitative data that the PPS group reported more pain intensity post-physiotherapy sessions, and the data did not indicate that the PPS group were praying more than the PAS group. For example, the quantitative data showed that the two groups had similar mean scores in ‘praying and hoping’ subscale strategies from the PCSQ, pre-physiotherapy sessions and that their scores remained unchanged post-physiotherapy sessions.

Baldacchino and Draper (2001) reported that people who believe in God may show an additional way of CS mainly by increasing their relationship with God by performing prayers and participation in community religious practices at places of worship. This concurs with Qureshi et al. (2020), who reviewed 48 studies based on religious CS and concluded that performing prayer is the most common form of CS with pain used in KSA. This concurs with the findings of the PPS group only, where praying and hoping was the most frequent CS they used. However, my study did not explore other religious CS, such as the use of specific herbs, honey or practices like Hijama.

The qualitative data showed that three patients from the PPS group reported that they pray to Allah asking for pain relief. This spiritual religious CS according to Aflakseir and Coleman (2011), is useful in managing physical discomfort or emotional stress. For example, PPS (8) reported that when he performed Islamic prayer to Allah it diminished his pain and improved his mood. This has been discussed in Islamic and non-Islamic studies that prayers can interrupt the pain cycle, improving physical and mental health, reducing anxiety and promoting relaxation (Azhar and Varma 1995; Watts 2001; Khan 2006; Hamdan 2010; Asadzandi 2019). Whereas, whether individuals from the PAS group used praying for coping for their pain was not apparent in the qualitative data. Although the PAS group showed reduced pain post-physiotherapy sessions, having normal anxiety and depression levels, and higher self-efficacy compared to the PPS group, both groups scored equally in praying and hoping subscales. This suggests that Muslims perform prayer as part of their Islamic religion with or without the presence of pain or being anxious or depressed. Salleh et al. (2009) and Dedeli and Kaptan (2013) indicated that some Muslims have a common belief that illness and pain are caused by Allah and attribute their suffering to Him. Thus, they seek help from Allah and thank him for good health. This concept is presented by two patients from the PPS group: PPS (5) and PPS (9).

> *“Sometimes, just as soon as I think about my previous pain, how it was and how I am now, thanks to Allah, and then thanks to physiotherapy,…I do not want to feel the pain like the first time because it was severe." (PPS9, p5)*

Therefore, cultural factors and Islamic beliefs could be the reason for seeing praying and hoping being frequently used in all patients irrespective of their classification, within their obligatory prayer, and for some, as a CS for pain management. Narayan (2010) and Yosef (2008) reported that cultural background and religion impacts on people’s perceptions about how to stop and respond to pain and illness. Some studies reported that some verses in the Qur'an support Muslims who face obstacles. Allah asks them to be patient and optimistic and infers that these obstacles will be relieved, and when they act in this way they will be rewarded by

God (Hammoud et al. 2005). Thus, from an Islamic perspective, pain serves a purpose i.e. to strengthen a person`s attachment to Allah (Salleh et al. 2009). The Qur'an therefore emphasises spiritual CS when Muslims face obstacles to feeling better through the remembrance of Allah, by applying specific prayers, reading verses of the Qur’an, being patient, and fasting for example (Aflakseir and Coleman 2011). The Prophet (PBUH) also said: teach your children skills, such as swimming, archery and horse riding (Wabuyabo et al. 2015), this could be a recommendation to Muslims to be physically active and exercise to maintain body strength and health (Khan 1990). Thus, this recommendation might show that Islam promotes individuals, including those with CLBP to take responsibility for treating themselves, engaging in physical activity and exercises to maintain body health.

However, some Muslims with CLBP may accept their pain as a destiny or so called ‘Al-Qadar’, where they believe that their Al-Qadar has been decided by Allah, and they live with the intended outcomes. Yosef (2008); Nabolsi and Carson (2011) reported that Muslims must have faith in Allah, His angels, His sent books, His messengers, and the last day and destiny, whether good or bad, and this leads to a state of complete faith in Islam. In turn, this doctrine helps Muslims to accept illness as the will of Allah. However, many believers possibly live passively in this belief (Maki et al. 2021); for example, Wan Zakaria (2015) argued that some Muslims have unintentionally misinterpreted the true meaning of Al-Qadar, such as seeing their fate as the will of Allah, without taking responsibility. Islamic teachings from the Holy Qur`an tell believers “God does not change what is in people until they change what is in themselves (Qur'an 13:11) (Itani 2012, p123). Here Allah wants to show people that they have to take the first step, in order to make changes or resolve issues, and consequently, Allah will show help and support (Wan Zakaria 2015). The PPS group in this study might accept their pain as Al-Qadar, but the qualitative data from the PPS patients showed they were not making any effort to participate actively in the HTE developed by their physiotherapists to resolve their problem, and they appeared to rely on medication, exhibiting catastrophic behaviours and, in most cases, were experiencing anxiety and depression. The PPS group had been given exercises as a new active CS behaviour, yet it appeared in the main they did not to accept this approach. The reasons behind not accepting this new behaviour and using only medications were discussed earlier with respect to low self-confidence, and most did not find the HTE effective in reducing the pain and some were fearful of doing HTE.

Acknowledging the prevalence of religious belief in Kuwait, is one strategy that could be employed by physiotherapists is to address the matter of pain and SMS from an Islamic perspective, as for some patients this was relevant. For example, the teachings of Prophet Mohammad (PBUH) ; a believer with strength is more valuable and dearer to God than a believer who is weak (Kızar 2018), could be used to encourage patients to exercise for pain relief and strengthening their body.

The literature on Islamic prayer contradicts Western studies on praying; (Mercado et al. 2000; McCracken and Eccleston, 2003; Woby et al. 2005; Koleck et al. 2006) and showed that praying and being optimistic to the will of Allah is recommended by Islamic teachings and suggests that it is a form of physical activity within Islamic countries (Tab et al. 2017). Praying, therefore, should not be seen as unhelpful CS to all patients with CLBP within Muslims nations. In contrast, patients with CLBP could be encouraged to pray in mosques to encourage walking activities and socialising with others. In addition, praying consisting of postures and movements has been reported to have a positive effect on the lower back muscles (AlAbdulwahab et al. 2013).

Although there was no difference in praying and hoping between the PAS and the PPS groups, the differences were as indicated in the qualitative data that the PAS group relied on active CS, such as the HTE, engaged in praying and hoping to self-manage their pain and used active CS more frequently as indicated in the quantitative data. However, the PPS group only submitted their responsibility to God without being actively involved in their treatment, despite two patients from the PPS group attaining temporary pain reduction whilst engaged in a spiritual religious atmosphere. Praying to God from Islamic and non-Islamic studies explained the effect of praying in patients with or without chronic pain, as having a positive effect by making patients more able to tolerate pain, improves stress, reduces worry and distress, promotes relaxation and finding inner peace (Azhar and Varma 1995; Khan 2006; Hamdan 2010; Dezutter et al. 2011; Ghufran 2011). This was also reported in a SR by Fatima et al. (2022) who noted that when prayer is performed properly, it can lead to spiritual and physical benefits. However, no patients from either of the two groups in this study referred to the physical improvements due to praying. As pain has physical, social, psychological and spiritual aspects (Narayan 2010), prayer may improve these aspects. This temporary reduction in pain could result from individuals feeling calm and reassured as reported by one PPS patient; alternatively, it might result from other factors in addition to praying and hoping alone, such as using medication as presented by PPS (5).

> *"I mean, yesterday my psyche was deteriorated because pain was severe, so I prayed to God to ease my pain, and I cried while I was praying, and along with taking Lyrica tablets, my pain was relieved, praise be to Allah". (PPS5, p6)*

Muslims believe that the Creator is Allah, and each person should take care of their bodies (Yosef 2008). Although the PPS group used medication as a CS, they appeared to choose this rather than using HTE as a problem-solving approach for their CLBP. As such this approach could be seen as a religious view of coping with pain in which people defer their whole responsibility to God. Pargament et al. (2005) states that religion was a unique form of CS, however, this deferring style is considered as a negative CS by some and Voytekno et al (2021) argued that this style is an insecure relationship with the God.

The PAS group, however, in the main were highly engaged with HTE but equally shared their problem-solving with God. This is reported as a collaborative style and a type of CS response encouraged by most religions (Pargament et al. 2005; Maki et al. 2021). For example, Hodge and Nadir (2008) recommend a spiritually modified strategy for Muslims that recognises role of Allah, whereby believers are encouraged to accept Al-Qadar ‘will of Allah’, and to maintain Islamic values. Muslims believe in dependence on Allah (Maki et al. 2021), hence, they could be motivated to be in charge for self-managing their CLBP actively, with the belief that the greatest success of SMS is reliant on Allah. Therefore, collaborative religious CS could be regarded as a positive CS (Salleh et al. 2009; Dedeli and Kaptan 2013), where individuals collaborate with Allah to seek support and balance their own efforts to self-manage, such as addressing stress, and seeking support from family. Therefore, for effective pain management, praying and hoping could be a positive part of a strategy combined with an HTE programme. Physiotherapists would need to ascertain what approaches their patients utilised to elicit the best results from any

HTE programme. Nevertheless, none of the physiotherapists in this study reported this approach.

8.2.4 Anxiety and depression as a coping strategy

Chronic LBP-related disability is a multifactorial biopsychosocial condition within different cultures (Alamam et al. 2019), and factors, such as anxiety, depression, pain and FAB are common in patients with CLBP (Ramond et al. 2011; O'Sullivan et al. 2013). The ability of individuals to control the emotional responses resulting from stressors, e.g. anxiety and depression, is an important concept in relation to LBP management (Main and Waddell 2004), and is seen as an active CS (Bussing et al. 2010).

Anxiety and depression were measured using the HADS PROMS, with dissimilar findings being found between the groups pre- and post-physiotherapy sessions. The quantitative data showed that the mean scores for the PPS group indicated higher anxiety levels during pre- (11.4) and post-treatment (13.2) than the PAS group, pre (5.6) and post-treatment (5), suggesting that most of the PPS group were anxious before and after treatment. In addition, the mean depression scores were higher in the PPS group pre- and post-physiotherapy treatment, i.e. pre-(14) and post-treatment (10) than the PAS group pre- (4) and post-treatment (5.4). Both these data sets might indicate that most of the PPS group failed to control their emotional responses before and after treatment, whereas most of the PAS group successfully controlled their stressors pre- and post-physiotherapy treatment.

The qualitative data from two PPS patients explained that they were depressed due to having been in pain for a long time, which concurs with McCracken and Turk (2002) who noted an association between persistent LBP and depression. Another reason might be that the PPS group received less social and particularly family support than the PAS group. For instance, one patient reported he missed his family, who were in Egypt, and that nobody in Kuwait was taking care of him. Another patient reported that she wanted to care for her sick mother, but often her pain stopped her from visiting and caring her. Therefore, as stated previously, that family from both Arabic Islamic culture and western culture, provided emotional stability to people (Salleh et al. 2009) and helps them to cope with their illness (Oraison and Kennedy 2021). Hence, some of the PPS group in this study might lack adequate family support that may have enabled them to control their emotional responses including anxiety and depression.

Haggman et al. (2004) reported that depressed patients depend more on medication to enhance their mood and to decrease their pain. However, there are contradictory findings within the literature regarding the positive results from taking medications, such as antidepressants. A SR by Jackson et al. (2006) showed that evidence of the beneficial effect from anti-depressant therapy is weak for pain and depression in people with CLBP. However, Chan et al. (2009) in their SR, revealed that anti-depressants were effective in reducing pain and depression in people with CLBP and could be more effective when used as an adjunct to CBT to target psychosocial factors.

In this study, from the quantitative data, one patient from the PAS group was identified as having an abnormal level of anxiety post-physiotherapy treatment. The qualitative data shows that the patient was physically active, committed and maintained HTE, and that the patient expected to have a full recovery from pain that was not achieved by doing HTE. Thus, if the patient expectation of pain relief from the treatment was not achieved this might be the reason why he was anxious after treatment. Studies by Krishnan et al. (1985) and Sagheer et al. (2013) showed that persistent pain leads to worrying thoughts, which is a situation commonly seen in CLBP patients. McCracken and Turk (2002) and Waddell (2004) noted that the anxious feelings that patients exhibit may be a result of having been in pain for a long time and anxiety can be present when patients are dissatisfied with the results of the treatment (Liddle et al. 2007).

8.3 Self-management strategies that patients received.

Both groups received education and advice from their physiotherapists about the strategies as part of a SMS to support them to cope better with pain. These aspects included general advice about strategies to use at home and work, such as heat therapy, and education about the importance of adhering to HTE for better outcomes. From the patients` perspectives these data are similar to the data from physiotherapists’ perspectives about SMS, as they consisted of various recommendations and exercises. The instructions and management that the CLBP patients received in this study are reported by Al-Enezi and May (2017) as typical of treatments that the physiotherapists have learnt during undergraduate and postgraduate training in Kuwait.

Although the guidelines by NICE (2021) frequently recommend education, such as pain neuroscience education for CLBP patients as part of SMS, the details of HTE given by the physiotherapists in this study was inconsistent between the two groups from the patients` perspectives. For example, most of the PAS group received education about how to perform each HTE compared to just a few of the PPS group. Half of the physiotherapists interviewed, nevertheless, advocate the importance of educating patients how to perform the HTE correctly before physiotherapy discharge. It can be seen from the patient details (Table 5.3) that some patients from the PPS group received less treatment sessions compared to the PAS group, which might be one reason why they received less education. However, one PPS patient who completed a few treatment sessions reported receiving a thorough education and motivation to self-manage his problem. Thus, the number of treatments might not be linked to the amount of education the patients received. Phelps et al. (2021) revealed that patients with chronic pain frequently reported cognitive difficulties, such as impairments in attention, learning and memory, and these were associated with patients reporting high pain intensity and frequent use of medication. Therefore, the amount of information the patients received could be a reason why some patients are more receptive to receiving and to retaining information than others, or it may depend on the ability of the physiotherapists to deliver good education. However, this would need further investigation to verify this.

The qualitative data indicated that the number of the PAS group who receive education about the benefits of the HTE appeared to be more than in the PPS group, where the majority perceived that there had been no education. A contradictory perspective was found amongst the PAS and PPS patients regarding whether they found physiotherapists’ educational role and advice to be helpful for self-managing their pain. The majority in the two groups, three in each group, found that the SMS advice and recommendations to be helpful, whereas two in each group stated that they were not. Interestingly, three patients of the PPS group already reported that the HTE did not help them reduce their pain, and therefore it might appear from the qualitative data that the application of passive CS, e.g. heat and postural position, along with taking medication, were the only strategies that were helpful.

SMS are based on facilitating the education of the patients to support them in solving their problems on their own (Lorig et al. 2003). This study, from patients` perspectives reported that some physiotherapists are not delivering full details about the HTE, which could impact on their CS and hinder their SMS. Empowering patients to engage with SMS requires them to be educated about SMS skills by their healthcare provider, and to be able to help manage their problem (Machado et al. 2017). This can lead to the patients adhering to the exercises and accepting having an active lifestyle (Grady and Gough 2014). Spetch and Kolt (2001) stated that effective education required physiotherapists to provide an accurate explanation of the nature of the pain, precise details regarding the patients' rehabilitation programme, and the rationale for choosing this treatment over another. In this study, qualitative data from all physiotherapists reported that the prescriptions of HTE would be based on patient`s assessment and three reported educating their patients about the benefits of exercising to manage CLBP. Additionally, three physiotherapists indicated the necessity of educating patients with CLBP about the nature of their condition.

8.3.1 Case example

In this case example at the pre-treatment point, patient 9 scored low in the PSEQ, used medication moderately, was classified as having a borderline abnormal anxiety level, and an abnormal depression level, used praying and hoping and catastrophising CS frequently. According to these results, the patient was classified into the PPS group prior to treatment. After physiotherapy, patient 9 was the only one who had a high score in the PSEQ, increased his CS to cope with pain without using medication, was classified as having normal anxiety and depression levels, and active CS were the most common strategies used by the patient. In addition, the patient reported a low score in the NPRS, and was identified as at low risk of having persistent LBP. These results showed that patient 9 would be regarded as PAS following treatment (Table 8.1). Thus, exploring this one case, whilst recognising the limitations posed by a single case, may be of value.

Table 8.1. Patient 9 reported outcome measures on the Numerical Pain Rating Scale, Pain Self-Efficacy Questionnaire, Hospital Anxiety and Depression scale, STarT Back screening tool, and catastrophising.

	Pre-physiotherapy session	Post-physiotherapy sessions
Patient type	PPS	PAS
NPRS	7	2
PSEQ score	19	52
Self-efficacy Level	Low	High
Self-efficacy (Q7)	3 (half of the scale)	5 (upper half of the scale)
HADS (Anxiety score)	9	6
HADS (Anxiety level)	Borderline abnormal	Normal
HADS (Depression score)	11	3
HADS (Depression level)	Abnormal	Normal
SBST score	6	3
SBST subscore	3	1
SBST Risk level	Medium	Low
Catastrophising	4.1	2

Key: NPRS=Numerical Pain Rating Scale, PSEQ= Pain self-efficacy questionnaire, HADS= Hospital Anxiety and Depression Scale, SBST= STarT- Back screening tool.
Self-efficacy: each item to score how confident they believed/felt to execute activities, despite the pain, Low self-efficacy= total score <40 (patients` seek pain relief before engaging in exercises programme, High self-efficacy= total score >40 (patients likely to respond well to exercise programme, to maintain, or to build on their functional abilities, catastrophising= mean score of catastrophising subscale from the Pain Coping Strategies Questionnaire.

The qualitative data from patient 9 post-physiotherapy revealed that the patient was dealing with pain actively and meant that he had confidence and acknowledged the responsibility to self-manage the pain. He relied mostly on active CS, such as the HTE, less reliance on medication, used the ignoring pain technique and adopted an active lifestyle post-treatment. This concurs with Escolar-Reina et al. (2009), who indicated that CLBP patients used less medications as SMS when they received education about their issue and clear information about the importance of the SMS. However, the remaining four PPS maintained exhibited passive CS. This raised the question of why patient 9 was the only patient from the PPS group who became PAS post-physiotherapy sessions. The qualitative data showed that the advice and recommendations that the physiotherapist provided were helpful from the participant`s perspective and induced pain relief.

Notably, patient 9 was the only one who reported that he had received education on how to perform HTE, how to progress it, the benefits gained from doing it, and for how long the patient must adhere to it. Consequently, this may have contributed to the patient`s reduction in pain which was not seen in the remaining PPS patients.

The catastrophising subscale showed that the catastrophic thoughts scoring was reduced following treatment, and this could be due to the reduction in his pain intensity, perceived effective HTE, in addition to the motivation the patient reported that he received from his physiotherapists.

Patient 9 also indicated that he had been taught about every single detail of the proposed HTP/SMS. Although the patient complained about the prescription of too much HTE, the fact that the patient was able to schedule and to manage the exercises might have helped to solve the issue. This problem-solving skill is a key to successful SMS and resulted from being supported and understanding the condition (Lorig et al. 2003). This is similar to the qualitative findings from the physiotherapists' results in this study, where the majority reported that delivering good education and motivation to the patients helps in terms of the success of SMS. The qualitative findings from Slade et al. (2009) also showed that the CLBP patients recognised the positive influence of motivating and encouraging instructors and agreed that these qualities and effective skills facilitated exercise adherence and better treatment outcomes as a result.

Lorig et al. (2003) highlighted the importance of enhancing the self-efficacy of chronic patients within the SMS programme to manage their activities of daily living, which may be enhanced by motivation, having good social support and frequent follow-up by physiotherapists. How much level of support patient 9 received from his family was not clear from the qualitative data. Although patient 9 reported that he completed 1-3 treatment sessions, which were less than many patients in this study, this may indicate that the patient received a thorough education and motivation at an early stage or may be linked to him being more receptive to receiving and retaining information than others, but this would need further investigation for clarification. One physiotherapist indicated that education is a key factor for the management of CLBP, and she allocated the first session for thorough patient education. With respect to the concept of education this is concurrent with the findings by Siddall et al. (2022), which suggested that a combination of pain neuroscience education and exercise therapy led to greater short-term improvements in pain, disability, pain catastrophising comparative to exercise alone. We acknowledge that our findings from this single case as reported is not sufficient for generalisation, but useful information could be gleaned from this to be developed in future research.

8.4 Physiotherapists’ tailoring of self-management strategies for people with chronic low back pain

The qualitative data from the physiotherapists` perspectives, with respect to considering the patients’ CS responses and any psychological symptoms during the initial physiotherapy assessment were considered by two of the six physiotherapists. No physiotherapists used any specific questionnaires to discover what psychological and cognitive factors, including CS, patients with CLBP might exhibit, with most physiotherapists explaining that they were able to subgroup the patients using their clinical expertise. This included good communication, observing the patients’ behaviour and facial expressions, or when the patients requested to be supervised to do the exercises inside the clinic indicating that they lack self-confidence.

However, there is no evidence that physiotherapists with greater clinical experience treating patients with LBP are more able to screen and manage the biopsychosocial factors appropriately (Houben et al. 2004; O’Sullivan et al. 2013). Stevenson et al. (2006); Overmeer et al. (2011) and O’Sullivan et al. (2013) revealed that the training based on the biopsychosocial approach may be successful in changing physiotherapist’s perceptions of pain, and yet the knowledge and skills obtained during these courses are not necessarily translated into changes in physiotherapists’ treatment and patient outcomes and satisfaction.

Early screening for psychosocial risk factors has been recommended by Hill and Fritz (2011) and NICE (2021) to be used at the first patient contact to identify patients at risk of poor clinical outcomes and making care more effective. The early identification of passive and active CS is recommended by Carroll et al. (2002) who suggests that it might help target future treatments in patients with CLBP.

A study by Haggman et al. (2004) evaluated the accuracy with which physiotherapists screen for psychological factors, such as depressive symptoms, in patients with LBP in 40 multi-physiotherapy clinics, whereby patients completed the Depression Anxiety Stress Scales and a 2-item screening test for depression taken from the Primary Care Evaluation of Mental Disorders Procedure (PRIME-MD). The treating physiotherapists rated whether each patient was depressed or not on a scale of 0 to 10.The physiotherapists` ratings on this scale was less accurate than the 2-item screening test, thus concluding that the physiotherapists judgment on patients` depression should use the valid 2-item tool for screening symptoms of depression from PRIME-MD and yet the 2-items are rarely used in LBP studies. The study only included private clinics which limits the generalisability of the findings. Hence, the findings from Haggman et al. (2004) showed the physiotherapists' own rating approach is less accurate when compared to the PROMS and thus consideration is needed on the accuracy of physiotherapists' ratings approach in this study. Although we acknowledge that as noted previously the validity of the screening approach (using PCSQ, PSEQ and HADS) used in this study is unknown and needs further exploration.

Another possible reason for the low frequency of screening approaches by physiotherapists is reported by Synnott et al. (2015) who reviewed twelve studies, with 182 physiotherapists from the UK, Australia and Canada, related to physiotherapists' opinions about recognising and managing the cognitive, psychological and social factors that could be barriers to recovery for people with LBP. The review revealed that several physiotherapists lacked the confidence and necessary skills to discuss psychological factors amongst patients with LBP and it was concluded that physiotherapists preferred dealing with the more mechanical aspects of LBP. Physiotherapists also reported that neither their currently available professional education nor preliminary training afforded them with the necessary skills and confidence to successfully manage the multifactorial nature of LBP. This was not reported by the physiotherapists in this study. The strength of this review is that it followed almost all the points from the PRISMA checklist, however omitted to discuss any possible limitations of the review process used.

Similarly, findings from Al-Enezi and May (2017) revealed that physiotherapists in Kuwait focus less on current research evidence, and thus may feel less confident in recognising psychosocial factors during patient assessments, but this would need further investigation. Reviews by Nicholas et al. (2011) and Chou (2012) showed that high psychological factors detected at the first assessment, such as anxiety and depression, are linked to poor clinical outcomes. There is therefore a need for reliable and valid measuring tools to screen psychosocial factors at an early stage to improve LBP patients` recovery (George and Beneciuk 2015). As mentioned earlier, the education provided by some of the physiotherapists from patients` perspectives was not sufficient, and early screening may facilitate appropriate education and SMS.

One key goal of SMS is to increase patient self-efficacy (Lorig et al. 2003; Battersby et al. 2010) to gain the confidence to exercise. In the case of the PPS, they need to develop confidence and increase motivation and adherence to exercise, and this could be enhanced by a behavioural change programme (Beinart et al. 2013). Snelgrove and Liossi (2013) conducted a qualitative meta-synthesis to formulate the knowledge gained on patient experiences of CLBP. The review concluded that uncontrolled and unpredictable pain was found in patients with low self-efficacy, a feeling of guilt, and poor adherence to adopting SMS, whereas high self-efficacy led to better SMS, such as adopting more exercises. This concurs with the theory of self-efficacy by Bandura (1977), in which the self-efficacy shows the degree of confidence a patient has in performing normal activities and tasks despite the pain. Interestingly, four of the six physiotherapists in this study reported that HTE would be prescribed differently amongst the two groups without using an appropriate screening method. However, one physiotherapist believed that the PPS group only needed more care and a second believed that the PPS group only needed to be given a few exercises, and accordingly the same HTE programme was prescribed for both groups.

8.4.1 Rate of exercise frequency and progression

In this study, data from three of the six physiotherapists indicated that a thorough HTE programme would be prescribed for the PAS group, and they would be given more, and diverse exercises compared to the PPS group, with the PPS group being given simple and limited exercises. One physiotherapist believed that giving too many exercises to the PPS group was not satisfactory for them and would lead to the failure of SMS. Damush et al. (2008) reported that depressed patients with CLBP exercised less per week as a SMS in comparison with non-depressed patients, and that understanding the differences between the preferred CS of the depressed compared to the non-depressed patients is important when tailoring SMS.

In contrast, however, the limited amount of HTE was not satisfactory for one PPS, believing that programme was not considered to be a HTE programme. The patient did not feel any pain improvement whilst doing the HTE, and she scored a low total score on the PSEQ and identified very low confidence to cope with pain without using medication. This may be explained by the data from Nicholas (2007) and Ferrari et al. (2019) who state that some patients require pain management before engaging in activities. However, it is important to educate the patient about the harmful effects of prolonged medication use and positive benefit of exercise, as reported by on physiotherapist. Furthermore, educating the patient about the importance of good social support from family and community is in line with an Islamic perspective (Salleh et al. 2009), and to set frequent follow-ups with physiotherapists could provide reassurance to the patient. The same patient from the PPS group reported she had unpleasant experience during her physiotherapy sessions, and she complained about the treating physiotherapist twice to the head of physiotherapy department, so it might be that the physiotherapist did not provide enough education nor the volume of HTE expected by this patient.

This study from physiotherapists` perspectives shows that exercises should be progressed faster for the PAS group than the PPS, because physiotherapists believed that the slow and gradual progression for the PPS group enabled them to master the HTE. The slow exercise progression possibly might not aggravate the pain which will increase patient confidence. This concurs with Slade et al. (2009) who reported that CLBP patients felt that mastering the exercises in the correct way is key and that the exercises should be progresses slowly with minimal symptom exacerbation. However, to note Slade et al. (2009) did not categorise patients with CLBP, thus, it is not clear if a slow progression rate was preferred by all patients in their study. These factors would build confidence and encourage the patient to perform the exercises independently. This could be achieved by breaking the tasks into attainable smaller parts and a graded exposure approach to painful experience could possibly decrease pain perception and may build self-confidence (Bandura 1977; Woby et al. 2007). For example, one physiotherapist recommended that PPS needed to be given a graded exposure exercise technique to help patients to slowly engage with the HTE programme and reduce their fear. According to George and Zeppieri (2009), graded exposure therapy is used by physiotherapists to recognise the most fearful activities that the patients with CLBP exhibited. In addition, a graded exercises approach provides similar effects to graded exposure therapy in terms of reducing pain and disability for people with CLBP (George et al. 2010). Thus, a graded therapy approach might be a good choice for physiotherapists for targeting those patients who have a fear of doing exercises when added to the standard rehabilitation approach **(**George and Zeppieri 2009).

The selection of a suitable programme for the PAS group might be relevant, such as describing a thorough HTE with a faster progression rate of exercises, because the PAS group are seen to be using more active CS for their CLBP. The actual volume, progression, and nature of exercises for people with different CS warrants further investigation. Rainville et al. (2011), highlighted the importance of physiotherapists considering exercise frequency for people who exercise regularly and for those who do not. Too many exercises (i.e.to be completed daily) were seen as barriers by two patients in each group in this study. As shown in the patients` qualitative data, two patients from the PPS group were confused and afraid about doing the exercises. One patient from the PAS group believed he felt pain because of doing too much HTE in a day. This may be due to lack of clear education on how many times they needed to do the exercises, which might eventually affect the treatment outcomes. Findings from Kuukkanen et al. (2007) support the use of HTE with clear physiotherapist led education and exercise progression for CLBP patients and reported significant pain reduction over five years when compared to a control group. Progressive exercises could be helpful for LBP patients and should be developed with respect to patients' physical ability (Standaert and Herring 2007). However, no studies have measured the effect of progressive exercises for patients with CLBP as a SMS.

8.4.2 Patient-physiotherapist relationship

The majority of physiotherapists in this study reported that establishing a rapport with the PPS group, such as communicating in a good manner and listening to them, was a key factor to the successful management of persistent LBP (Lorig et al. 2003; Newman et al. 2004). However surprisingly this was not noted in relation to the PAS group. Effective communication between patients and healthcare providers appears essential to shaping a partnership that could affect the implementation of SMS (Fu et al. 2016), and this was discussed in Mead and Bower (2000) patient-centred framework, where they reported that physiotherapists should collect patient information with respect to a biopsychosocial profile to obtain the whole picture for each patient (Smith et al. 2013). In this study, there was a conflict between two physiotherapists where one advocated the importance of exploring the PPS characteristics deeply to ascertain any psychological signs, whereas the other reported that doing this leads to the patients being more dependent on the physiotherapists, which was felt to be undesirable. In support of the first view, PPS (5) described a relationship with her physiotherapist in a private clinic was based on caring and effective communication, leading to increased motivation to do exercises at clinic site only. Although there is no indication that this support transfers into the patients completing the exercises at home.

> *"as long as the physiotherapist laughs with me, talks to me a lot, takes care of me and follows me step by step, for example, raise your leg, Yes you can do it, I feel excited and motivated and there is a great care in private clinics." (PPS5, p4)*

This concurs with Cooper et al. (2008) who found that patients with CLBP need individual care, with a good relationship between the physiotherapists and patients. Liddle et al. (2007) agrees that these factors lead to increased CLBP patient satisfaction and better adherence to treatment. However, as previously stated, the patients might not maintain adherence with the HTE if it is not seen as being not effective in improving their pain. In addition, building a rapport might not be restricted to the PPS group as these skills may need to be considered for all CLBP patients, as establishing a good rapport with patients facilitates patients` behavioural change including using more active CS (Moffett et al. 2009).

In addition to building a rapport, one physiotherapist suggested that reassurance is key to supporting the PPS group and has been advised in most LBP guidelines (Airaksinen et al. 2006; Simonsen et al. 2021), as this can reduce anxiety, fear and catastrophic thoughts. For instance, reassuring patients through helping them feel respected, understood and cared for helps to reduce their anxiousness and it is seen as important to build a rapport with the healthcare professional in a balanced way without creating over-reliance on the physiotherapist (Pincus et al. 2013).

Most physiotherapists in this study indicated in theme (1) that all patients with CLBP need to be educated about CLBP regardless of what CS they used. However, it was also shown in theme (2) that three of the six physiotherapists only recommended education about their LBP for the PPS group as a key part of their treatment, however the reasons for this are unclear. In addition, one physiotherapist reported one part of the treatment plan for the PPS group was to educate them about the need to reduce reliance on medication, and three physiotherapists reported educating them about the necessity of adopting HTE. However, the literature notes that when CLBP patients had been educated about their problem, they had better adherence to SMS (Escolar-Reina et al. 2009), and that sharing knowledge with patients forms patient-therapist partnerships that were noted as an important element in the patient-centred approach (Besley et al. 2010).

The educational role of the physiotherapist could also reassure the patients when provided with sufficient details about their problem, including strategies on how to cope with it. Moderate to high quality evidence from a SR conducted by Traeger et al. (2015) revealed that educational support over a long period (e.g. leaflet, Back Book, biomedical information booklet, psychosocial, education about causes of back pain) provides reassurance to CLBP patients and improved the patients’ CS and their management of the problem. Education about their back pain seems a key element to treatment and can control anxiety, fear and catastrophic thoughts leading to better adherence to SMS. However, it seemed that the educational role from most of the physiotherapists in this study concerning lifting for CLBP was not evidence-based. For example, four physiotherapists educated their patients to bend their knees while lifting objects from the ground. In addition, one physiotherapist educated their patients to keep their back straight during sitting position in prayer, or when they performed forward kneeling movement. According to a SR and meta-analysis by Saraceni et al. (2020), they concluded that the existing advice to prevent lumbar flexion while carrying to reduce LBP risk was not evidence-based, as the prospective data showed from the review there was no association between the progress of significantly disabling LBP and lifting while flexing the lumbar spine. Therefore, it might be that most of the physiotherapists in this study relied less on current evidence-based research, and this data was similar to the findings from Al-Enezi and May (2017) as discussed in the literature review.

Beinart et al. (2013) revealed that a lack of patient motivation might lead to treatment denial, or dropping out of treatment and that there is a need to determine whether patients who receive motivational support can actively self-manage their pain (Jensen et al. 2003). In this study, motivating patients and encouraging them to apply the HTE was highlighted as a good choice of treatment for the PPS group, as emphasised by one physiotherapist. However, motivating all patients was highlighted by most of the physiotherapists as being an important factor leading to the success of SMS.

One PPS patient expressed a preference for a physiotherapist who adheres to Islamic beliefs, specifically emphasising a fear of Allah while providing treatment. The concept of 'fear of God' is a commonly used phrase in Kuwait, reflecting a cultural and Arabic-specific term within Islamic traditions. In Arabic culture, expressing 'fear of Allah' is similar to reminding someone of the divine presence when they are perceived as not acting with integrity or providing suboptimal care. Therefore, the patient from the PPS group may have felt that she did not receive optimal treatment and sought a physiotherapist who has a deep sense of religious duty, such as fear of Allah, to ensure the best possible care would be offered.

“ I need someone to supervise my treatment, who shall be sincere,
fear Allah, considerate my feelings and provides me with exercises,
then I will be motivated, but at home I am not motivated at all"
(PPS5, p7)

It might appear that all CLBP patients needed to be motivated to adopt more active CS, however, it might be the case that the patients with PPS need more encouragement to control their fear, anxiety, and depression and to develop the self-confidence to enable them to successfully self-manage their pain. This was demonstrated in the case example of patient 9 (Page 239). Half of the physiotherapists reported that CLBP patients needed to be motivated to have more confidence to engage in HTE. The social cognitive theory revealed that the more confidence the patients have, the more motivation they show when faced with obstacles (Bandura 1989). Moffett et al. (2009) further reported that increasing patients` self-efficacy together with effective communication is important in a patient-physiotherapist relationship that supports patient-centredness.

The NICE guidelines (NICE 2021) recommended that LBP patients who are at low risk of poor outcomes need simpler and less in-depth support, such as reassurance, advice to keep active and guidance on SMS and are expected to recover rapidly. Conversely, more in-depth support is required for those who are at a higher risk of a poor outcomes, such as using a psychological behavioural approach that encompasses current pain education, reassurance, motivation, and shared treatment decision making involving the patients.

8.5 Summary

The patients in this study were classified into two groups, PAS or the PPS, based on their scoring on three PROMS: PCSQ, PSEQ and HADS. PAS were those who appeared to mainly use active CS, whereas PPS were those who appeared to use more passive CS. Adherence to HTE was associated with the PAS group only, and specifically those with a higher self-confidence to perform exercises at home and who relied less on their physiotherapists, who were motivated, satisfied with the exercises as a form of pain reduction and who received family support. The PPS group did not adhere to HTE as they appeared not to have enough confidence to self-manage the pain and were dissatisfied with the ability of HTE to reduce the pain. They appeared to be less motivated to take responsibility to self-manage their pain and searched for alternative ways of coping such as relying on an external source including the physiotherapist or medication. The PPS group demonstrated catastrophic thoughts that may be due to not having enough confidence to self-manage the pain, less family support, and possibly because they did not receive enough education or motivation from their physiotherapists.

This study was conducted in Kuwait, an Islamic country, and all the patients recruited used prayer and hoping pre- and post-physiotherapy sessions as a part of their Islamic religion. In this study all participants prayed equally with respect to frequency, but some PPS patients referred to praying to Allah for support and felt that their disability was their destiny, with one patient wanting a physiotherapist who adhered to Islamic beliefs. Understanding the patient’s stance on the value of prayer may be important when developing treatment plans. For some patients combining praying and hoping coupled with other active CS could be a suitable approach. Further investigation is required to understand the role of prayer and hoping for people with different coping strategies.

All patients received SMS, however from the patient’s perspective it was felt that the HTE was not as comprehensive as they wished. One PPS at pre-treatment categorisation changed to PAS post-treatment, which could be because he reported that he had a good rapport with his physiotherapist and felt that he had received sufficient education regarding his pain and SMS, and that he was reassured. This patient reported an improvement in pain whilst adhering to the HTE in comparison to the rest of the PPS group who reported no improvement.

Most physiotherapists used their expertise to screen the patients to plan treatments for PPS and PAS patients, but building a rapport and providing reassurance, education and motivation were seen as a desirable for all patients with CLBP regardless of coping style. Half of the physiotherapists recommended providing the PAS group with a comprehensive and thorough HTE programme, with a faster progression rate of HTE compared to the PPS group. The PPS group, however, were given a few simpler HTE by most of the physiotherapists, with a slower progression.

8.6 Conclusion

Adherence to a HTE is linked to those exhibiting active CS, and specifically to those with higher self-confidence to perform exercises at home, perceived family support and who are less reliant on their physiotherapists and medication. Patients with CLBP who have different coping styles may need different approaches to HTE programmes. All the patients in this study lived in Kuwait and led their life as part of the Islamic culture and as such praying and hoping was common for all patients and for some was a prominent part of their CS. Following classification into either PAS or PPS, as determined using a combination of three questionnaires; PCSQ, PSEQ and HADS, which covered aspects such as patients CS, self-efficacy, anxiety and depression levels, this study demonstrated different CS in both the PAS and PPS groups. These could be useful when developing bespoke treatment plans for patients with different CS.

8.7 Implications for clinical practice

Although psychological factors have been found to influence patient adherence to the prescribed treatment (Chan et al. 2009), the results of this study showed that no physiotherapists were using reliable and valid screening tools for patients in relation to CS, but relied on their expertise. Early information about psychosocial factors might be useful to develop appropriate and effective treatment (Haggamn et al 2004, Beneciuk et al. 2012). Thus, patients` CS might be considered by physiotherapists at an early stage of presentation to deliver the bespoke treatment (Olivera et al 2019). Knowledge about these CS and psychological factors is key and education curriculums at both undergraduate and postgraduate level should ensure updated knowledge about the biopsychosocial management of LBP, and the impact of spirituality CS on SMS. In addition, education could focus on improving physiotherapists' knowledge and understanding of pain management and prepare them to support patients in terms of their spiritual needs. Spiritual CS might be a useful addition to an active SMS programme and physiotherapists may consider integrating prayers when treating Muslim patients with CLBP. As an example, physiotherapists could educate patients about the collaborative coping style and advise them to build their relationship with God by using the collaborative style that encourages an active approach. Secondly, physiotherapists might consider delivering this education process without aligning themselves personally with an individual` faith, as physiotherapists only need to understand patients’ faith in order to use it to facilitate treatment. Enrolling physiotherapists in spiritual care education courses, similar to the Enhancing Patient-Centred Spiritual Care programme for nurses and midwifery (EPICC) (Leeuwen and Cusveller 2004), could be an effective way to prepare them to integrate spiritual care into healthcare education and practice. EPICC provides guidelines, educational resources, and strategies to ensure healthcare professionals are equipped to address the spiritual needs of patients (Leeuwen and Cusveller 2004).

SMS should empower patients to take on the responsibility of self-management. This involves educating the patients to equip them with the required skills to self-manage through exercise adherence and an active lifestyle (Grady and Gough 2014). This in turn mitigates increases in healthcare costs by moving from medical management to wider biopsychosocial behavioural management (Richardson et al. 2014). The current findings suggest that physiotherapists feel that their expertise is adequate to screen patients as to what CS they use, however, the validity of this interpretation needs further investigation. Regarding the use of screening tools employed in this study, interpreting patients’ CS score on PCSQ is not straightforward and requires descriptive analysis for interpretation, which might not be practical for physiotherapists to use within the clinical setting.

8.8 Study limitations

This study used a mixed method (partially mixed sequential dominant status design) consisting of quantitative and qualitative approaches. The aim of the quantitative approach was to subgroup patients according to their CS using three PROMS: PCSQ, PSEQ and HADS. The subgrouping approach covers most of the CS found in the literature, which could not be covered by using the PCSQ alone. However, subgrouping the patients into PAS and PPS using these three PROMS was arbitrary and this was the first study using this approach. Thus, this approach was not validated nor was reliability established prior to conducting this study and this should be considered when viewing the data for each subgroup. In addition, the PSEQ was translated into Arabic by following procedures from the guidelines for processing cross-cultural adaptation for PROMS by Beaton et al. (2000), nevertheless, the psychometric properties for ArPSEQ was not assessed, and therefore validity and reliability of the ArPSEQ data cannot be determined.

In addition, the use of multiple PROMS (n=5) in this study required time and effort from the respondents to complete, and this might lead to patient fatigue or loss of concentration, thus affecting the answers given. However, from a research perspective multiple data sets may give a better picture of the whole person. The qualitative data aimed to gather a deeper understanding of data, yet with only 10 patients and 6 physiotherapists, the views would not be representative of all potential participants (Fowler and Lapp 2019).

This study examined the differences between PAS and PPS groups with respect to their coping with pain and their SMS. Thirteen patients who were screened initially were difficult to place in either the PAS or PPS groups as they demonstrated an almost equivalent level of using active and passive CS and thus were excluded. Therefore, the results of this study were only based on patients with CLBP who clearly fell into PAS and PPS groups and the data does not represent the wider range of people with CLBP.

The data were collected during the pandemic, and the patients and I were wearing full PPE, which might have impacted on the flow of conversation. The stress of COVID-19 might also have exacerbated patients pain intensity, anxiety and depression, and their CS which, in turn, might influence the responses. The data from the patients were collected two months after post-physiotherapy discharge, and therefore, the effects of the CS that patients adopted and the results from patient`s (9) case study may not represent a long-term effect as the application of SMS is a long-term process. Thus, the patient data represent only short-period effects.

The data from the six physiotherapists provided a deeper understanding of their approaches to tailor SMS differently for both PAS and PPS. Nevertheless, only one hospital site was utilised and therefore these findings cannot be generalised to other hospitals in Kuwait or wider. The physiotherapists had experience in treating a diverse range of LBP conditions, and yet to ensure that they were aware of the concept of CS I presented a written paper to the physiotherapists at an early point during the interview briefly explaining what CS are, including the difference between active and passive CS. This could also have influenced physiotherapists' responses to the questions. The findings might be affected by not interviewing physiotherapists who are experts in CS, although the data does offer insights into these physiotherapists' approaches.

8.9 Reflections and contribution to the body of knowledge

In this section, I will explain the rationale behind collecting data in Kuwait and how these findings helped me explore my own culture and contributing to the body of knowledge. The study was originally planned to be conducted in the UK in Cardiff, with NHS ethics documentation prepared. However, the prospect of collecting data in the UK, "as being outsider", was a concern for me. I was afraid of seeing patients with CLBP from a culture that was vastly different with respect to traditions, customs, language, and religion. Specifically, I was concerned about my ability to deeply explore their CS and SMS in English, and how to fully understand their feelings if colloquial language was used. These concerns were identified as disadvantages of being an outsider researcher, as noted by Kusow (2003) and Mercer (2007).

The proposed method in Cardiff was a sequential mixed methods design using questionnaires and semi-structured interviews. Specifically, a quantitative phase (2 weeks pre-treatment), followed by a quantitative and qualitative phase (4 - 8 weeks post-treatment), and repeating the first phase as a follow-up (6-month post-post-treatment). The rationale was that changing behaviour and SMS benefits are long-term processes. However, due to COVID-19 pandemic, the NHS ceased to accept any ethical approval applications, which stopped me from collecting data in UK.

Therefore, data collection was relocated to Kuwait, my home county, which was unplanned but enabled me to explore my own culture. The shift required the completion of new ethics applications for both the School of Healthcare Sciences and the Ministry of Health of Kuwait. Nevertheless, the ethical committee in Kuwait was inactive due to the COVID-19, causing further delays in data collection. The proposed method in Kuwait therefore was amended into two-phases for patients:

quantitative (2 weeks pre-treatment) and quantitative and qualitative (4 - 8 weeks post-treatment) and physiotherapist interviews at any time point. Information sheets and interview schedules for participants were translated into Arabic, with valid and reliable Arabic versions of PROMS were used, except for PSEQ which was translated through forward-backword approaches. Searching for valid and reliable Arabic PROMS was initially frustrating because I thought they might not be available, yet this change in plan has enabled me to explore my own culture, which has more relevance to my profession in my home country.

As a researcher, I found that all patients scored high in the “praying and hoping” subscale from PCSQ, which was not surprising to me given my insider perspective embedded in that culture. However, what did surprise me was the discrepancy between the perception of praying as CS in Islamic compared to non-Islamic countries as previously discussed in literature review, for example, several studies showed that praying to God is considered as a passive CS from non-Islamic countries, but from my perspective, as a Muslim, I find this difficult to comprehend. Therefore, further research made me aware that not all praying to God is considered as a passive approach, and to conceptualise praying as an active CS, individuals should cooperate with God to seek support, actively making an individual effort to manage stress and pain. This style of praying was identified as ‘collaborative style (Pargament et al. 2005).

The findings of this study along with existing literature enlightened me about the similarities and differences of CS between Kuwaiti Islamic cultures compared to Western cultures, as both cultures consider praying to God as helpful to resolve the CLBP. For instance, as previously discussed in literature review, both cultures encourage praying to God, socialising when praying at a holy place, such as mosque or church, and reading from holy books, such as the Holy Qur`an or the Bible as a CS for pain. Both the qualitative and quantitative findings contribute to the body of knowledge on how a small number of patients with CLBP present various CS that could impact the success of SMS, and these might be important to be considered by physiotherapists. The exploratory findings from patients` perspective helped me to understand that the patients with CLBP who mainly adopted passive CS might change their passive behaviour into a more active coping style, (e.g. patient 9), when they are given a thorough education, that could reassure them and help them to control their emotional stressors. The exploratory findings from physiotherapists` perspective helped me to understand that physiotherapists who have experience in treating CLBP perceive that they are able to screen patients regarding to their CS, and as such suggested tailoring different SMS for PAS and PPS patients, which could hopefully contribute to better patient outcomes (Figure 9).

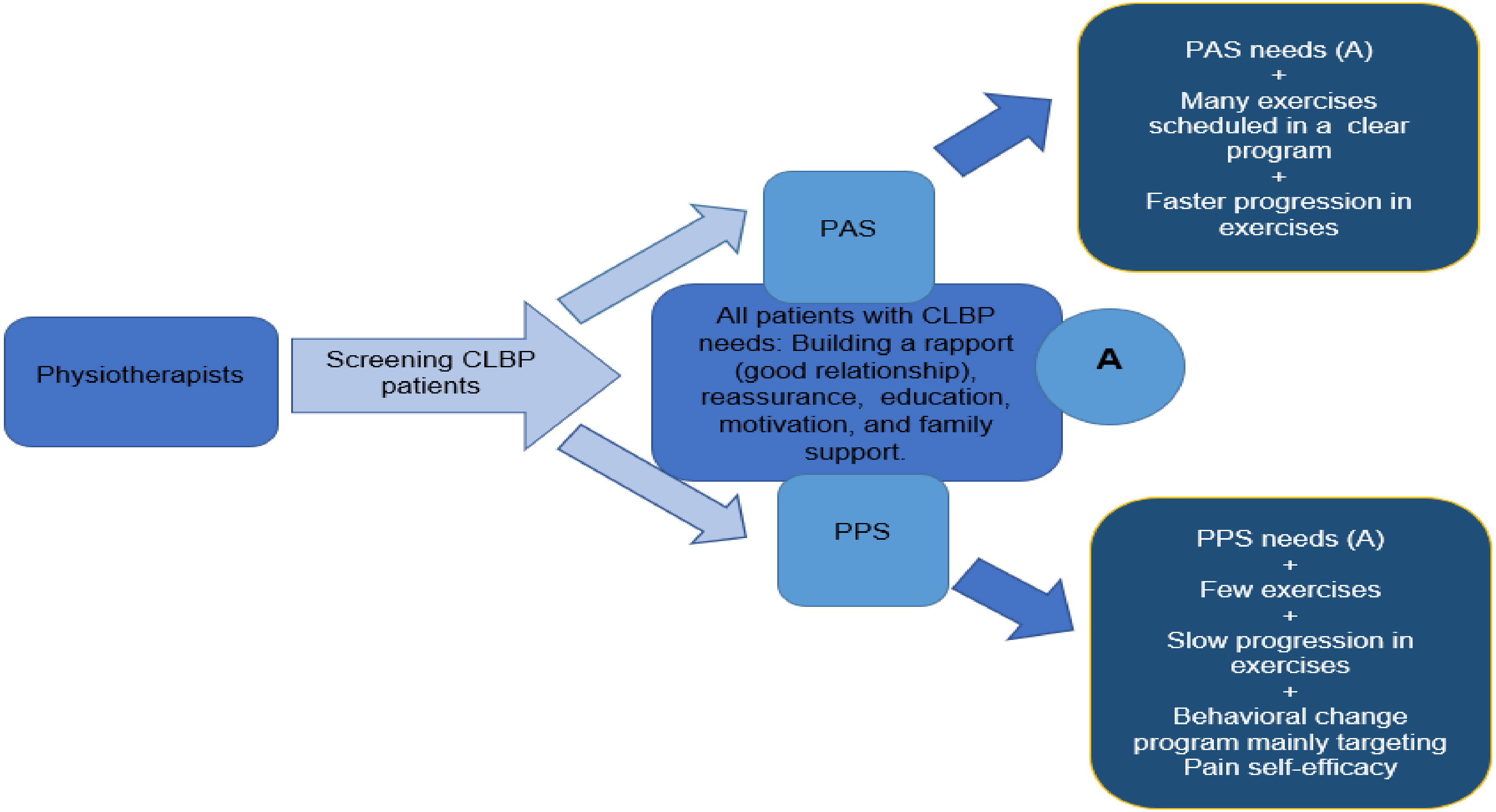


Figure 9. Summary of tailoring SMS for patients with CLBP, from physiotherapists perceptions and evidence from literature.

8.10 Future research

The results from this study suggest that CS responses may influence SMS in patients with CLBP in Kuwait; thus, it might be important for physiotherapists to differentiate between how they treat patients who adopt active CS compared to those who adopt passive CS. The classification approach adopted in this study; using PCSQ, PSEQ and HADS to subgroup patients into PAS and PPS had not been validated nor had reliability been tested as a group of questionnaires, and therefore testing this approach with an adequate sample size is key. However, consideration must be given to the length of time it takes for completion of several questionnaires.

The qualitative findings showed initial insights to develop a singular questionnaire that encapsulates CS and levels of anxiety, depression, and self-efficacy. As mentioned above, PCSQ might not be practical for physiotherapists to use within a clinical setting and further work is required to determine the best outcomes to determine CS in patients that take into consideration the wider biopsychosocial aspect of chronic pain. Once developed the tools' reliability, validity, and feasibility for use in a clinical setting and sensitivity to detect different CS, need to be established.

Further research could examine the psychometric properties of the PSEQ, which in turn could serve SMS in the context of physiotherapy in Kuwait. Future research could also investigate whether the implementation of a behavioural treatment approach could affect people's CS and how this could affect the success of SMS. Furthermore, patients who are difficult to place in either the PAS or PPS group were not examined in this study and this group needed to be investigated with respect to the CS and SMS strategies they adopt.

It would be useful also to explore the influence of the level of social support (e.g. family and friends) on pain, disability, psychological wellbeing for people with CLBP in Kuwait, and other Islamic cultures, as this appears key for managing chronic conditions. To date there are no studies from Arabic and Islamic perspectives and thus, qualitative research could explore patients' social support and the impact of attitudes, beliefs and expectations of patients with CLBP towards their pain and the level of support provide by physiotherapists in Kuwait and wider.

The influence of religion on CLBP patients' CS could be explored, as it appears that there have been no studies on the perceptions of physiotherapists and patients regarding spiritual care in Kuwait. Furthermore, there is a lack of research on how to prepare physiotherapists to integrate spiritual aspects of care into practice, for example, during their healthcare education. In the Arabic region and specifically in Kuwait, there is a lack of research on symptoms of distress, depression, anxiety, self-efficacy in Arab patients with CLBP and how it influences outcomes. In addition, the patients’ and physiotherapists’ relationship in Kuwait, is worthy of further exploration as it can impact on patient outcome.

Future research may also investigate physiotherapists` beliefs and attitudes about CLBP and what influences their decisions in the management of people with CLBP in Kuwait. It would also be valuable to evaluate the accuracy with which physiotherapists screen for biopsychological factors, such as patients` coping styles.

Finally, findings from patient (9) pre- and post-treatment inferred that it would be worth investigating the effect of physiotherapists’ motivational, educational, reassurance and partnership roles on patients’ passive CS and SMS in Kuwait.

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Appendices

Appendix 1: Key words and Boolean operators

The following keywords were entered into the literature search:

Key words	coping, self-management strategies, SMS, low back pain, lower back pain, LBP, chronic low back pain, CLBP, acute low back pain, ALBP, subacute low back pain, motivation, exercise adherence, pain self-efficacy, depression, self-determination, coping strategies, the hospital and anxiety depression scale, STarT Back tool, validity, reliability, locus of control, behavioural change, patient`s expectation, self-care, management programme, patient-centeredness, central sensitisation, home exercise programmes, home exercises, patient preferences, active coping strategies, passive coping strategies, adaptive behaviour coping strategies, maladaptive behaviour coping strategies, anxiety, biopsychosocial, psychosocial, family support, illness perception, fear avoidance belief, pain, psychological distress, cognitive behavioural theory, catastrophising, disability, quality of life, spirituality, Islamic culture.

- Coping responses AND low back pain OR lower back pain.
- Coping responses AND chronic low back pain OR chronic lower pain.
- Active coping response AND low back pain OR lower back pain.
- Active coping responses AND chronic low back pain and OR chronic lower back pain.
- Passive coping responses AND low back pain OR lower back pain.
- Passive coping responses AND chronic low back pain OR chronic lower pain.
- Self-management strategies AND low back pain OR lower back pain.
- Self-management strategies AND chronic low back pain OR chronic lower pain.
- Motivation AND low back pain OR lower back pain.
- Motivation AND chronic low back pain AND chronic lower pain.

- Exercise adherence AND low back pain OR lower back pain.
- Coping responses AND self-management strategies AND low back pain.
- Coping responses AND self-management strategies AND lower back pain.
- Coping responses AND self-management strategies AND chronic low back pain.
- Coping responses AND self-management strategies AND chronic lower back pain.
- Pain self-efficacy AND coping responses AND low back pain OR lower back pain.
- Pain self-efficacy AND coping responses AND chronic low back pain OR chronic lower back pain.
- Pain self-efficacy AND self-management AND low back pain OR lower back pain.
- Pain self-efficacy AND self-management AND chronic low back pain OR chronic lower back pain.
- Home exercise programme AND low back pain OR lower back pain.
- Home exercise programme AND chronic back pain OR chronic lower pain.
- Home management programme AND low back pain OR lower back pain.
- Home management programme AND chronic back pain OR chronic lower pain.
- Self-care AND low back pain OR lower back pain.
- Self-care AND chronic low back pain OR chronic lower back pain.
- Locus of control AND low back pain OR lower back pain.
- Locus of control AND chronic low back pain OR chronic lower back pain.
- Locus of control AND self-management strategies.
- Behavioural change AND low back pain OR lower back pain.
- Patient`s expectations AND low back pain OR lower back pain.
- Patient`s expectations AND self-management strategies.
- Goal setting AND low back pain OR lower back pain.
- Depression AND low back pain OR lower back pain.
- Patient-centeredness AND low back pain.
- culture AND pain
- Islamic culture and pain

Appendix 2

Table 5.13 Additional designs of mixed methods

Type of Mixed methods	Data collection	Analysis	Priority to	Merging at	Aims
The Triangulation Design (Hesse-Biber and Leavy 2008; O'Cathain et al. 2010).	One phase (Hesse-Biber and Leavy 2008) QUAN+QUAL are collected at the same time, or separately (O'Cathain et al. 2010).	QUAN+QUAL are analysed at the same time (Hesse-Biber and Leavy 2008) ,or separately (O'Cathain et al. 2010).	QUAN+QUAL are given equal emphasis (Hesse-Biber and Leavy 2008)	Interpretation phase (O'Cathain et al. 2010).	To develop a better understanding of a topic by gaining two different but complementary types of data (Hesse-Biber and Leavy 2008) Can be used to compare QUAL and QUAN data so as to present well corroborated conclusions (Hesse-Biber and Leavy 2008) Using QUAL data to validate the results from a QUAN survey (Hesse-Biber and Leavy 2008).
Partially mixed concurrent equal status design	One phase QUAN+QUAL are collected concurrently	QUAN+QUAL are analysed separately	QUAN+QUAL are given equal emphasis	not mentioned at which phase the merging occurs	Using QUAN and QUAL at the same time. Using QUAN to compare data between participants, and using QUAL to mirrors

(Leech and Onwuegbuzie 2009)					on participants understanding or experiences.
Partially mixed concurrent dominant status design(Leech and Onwuegbuzie 2009)	One phase QUAN+ QUAL are collected at the same time	QUAN+QUAL are analysed separately	Either the QUAN or QUAL has the greater emphasis.	not mentioned at which phase the merging occurs	The QUAN and QUAL occurs at the same time, using one method with greater emphasis than the other.
Partially mixed sequential equal status design (Leech and Onwuegbuzie 2009)	Two sequential phases	QUAN+QUAL are analysed separately	QUAN+QUAL are given equal emphasis	Interpretation phase	Using QUAN survey followed by QUAL phase with equal priority to understand the meaningfulness of data and experiences of participants.
Partially mixed sequential dominant status design	Two sequential phases	QUAN+QUAL are analysed separately	Either the QUAN or QUAL has the greater emphasis.	Interpretation phase	Mixing to different data and giving one data set less emphasis and second data set a greater emphasis.

(Leech and Onwuegbuzie 2009)					
Fully mixed concurrent equal status design (Leech and Onwuegbuzie 2009)	One up to many phases QUAN+ QUAL are collected at the same time	QUAN+ QUAL are analysed at the same time	QUAN+QUAL are given equal emphasis	at the research objective and data analysis and inference stages of the research process.	Mixing QUAL+ QUAN research within one or more or across four components in a single research study.
Fully mixed concurrent dominant status design (Leech and Onwuegbuzie 2009)	One up to many phases QUAN+ QUAL are collected at the same time	QUAN+ QUAL are analysed at the same time	Either the QUAN or QUAL has the greater emphasis.	at the research objective and data analysis and inference stages of the research process.	Mixing QUAL+ QUAN research within one or more or across four components in a single research study.
Fully mixed sequential equal status design	One up to many sequential phases QUAN+ QUAL are collected separately	QUAN+ QUAL are analysed separately	QUAN+QUAL are given equal emphasis	at the research objective and data analysis and inference stages of the research process.	Mixing QUAL+ QUAN research within one or more or across four components in a single research study.

(Leech and Onwuegbuzie 2009)					
Fully mixed sequential dominant status design (Leech and Onwuegbuzie 2009)	One up to many sequential phases QUAN+ QUAL are collected separately	QUAN+ QUAL are analysed separately	Either the QUAN or QUAL has the greater emphasis.	at the research objective and data analysis and inference stages of the research process.	Mixing QUAL+ QUAN research within one or more or across four components in a single research study.

Key: QUAN: quantitative study, QUAL: qualitative study

Appendix 3: Patients’ poster (English version)

Participants Needed

For research exploring how people with low back pain prefer to manage their back pain.

Have you had low back pain for more than 3 months? Are you aged between 18 and 65 years old?

We are looking for participants to take part in a study which involves completing questionnaires and having an interview to understand how you manage your back pain.

Your participation is completely voluntary and will take a maximum of 1 hour and a half. For more information speak to your physiotherapist or contact:

Main Contact: Mohammad Mandani (PhD Research Student)

Email: [redacted]

Telephone: [redacted]

Patients` poster (Arabic version)

الحاجة إلى مشاركين

للبحث الذي يهدف الى استكشاف كيفية تفضيل الأشخاص الذين يعانون من آلام أسفل الظهر إدارة آلامهم.

هل عانيت من آلام أسفل الظهر لأكثر من 3 شهور؟ هل يتراوح عمرك بين 18 -65 عاما؟

نحن نبحث عن مشاركين للمشاركة في دراسة تتضمن استكمال استبيانات واجراء مقابلة لفهم كيفية ادارة آلام اسفل الظهر.

مشاركتك طوعية تماما وستستغرق 1 ساعة ونصف كحد أقصى. لمزيد من المعلومات ، تحدث إلى أخصائي العلاج الطبيعي أو اتصل

جهة الاتصال الرئيسية: محمد مندني (طالب دكتوراة)

البريد اللالكتروني : [redacted]

تلفون: [redacted]

Appendix 4: Physiotherapists` poster (English version)

Participants Needed
for a study exploring Physiotherapists` choices for self-management strategies for patients with low back pain

Are you a Physiotherapists who has treated patients with low back pain for over 6 months? The study involves an interview which will last approximately 1 hour, to better understand the reasons behind the choice of self-management strategies given to people with low back pain.

Your participation is completely voluntary, and your opinions will be important in helping people with low back to better self-manage their pain.

For more information or if you are interested in participating please contact:

Main Contact: Mohammad Mandani (PhD Research Student)

Email: [redacted]

Telephone: [redacted]

Physiotherapists` poster (Arabic version)

الحاجه لمشاركين
للبحث الذي يستكشف خيارات اخصائي العلاج الطبيعي لوضع استراتيجيات الاداره الذاتيه او مايسمى ب الخطه العلاجيه المنزليه للمرضى الذين يعانون من آلا اسفل الظهر.

هل انت أخصائي علاج طبيعي تعالج مرضى آلام اسفل الظهر لمدة 6 شهور واكثر؟
البحث يتضمن مقابلة تستمر لمدة لاتزيد عن ساعة وذلك لفهم الأسباب التي يختار فيها اخصائي العلاج الطبيعي وضع الخطة العلاجيه المنزليه لمرضى آلام أسفل الظهر بشكل أفضل.

مشاركتك طوعية تماما ، وستكون آراؤك مهمة في مساعدة مرضى آلام اسفل الظهر على إدارة آلامهم بشكل أفضل.
لمزيد من المعلومات أو إذا كنت مهتما بالمشاركة، يرجى الاتصال ب:

جهة الاتصال الرنيسية: محمد مندني (طالب دكتوراة)
البريد اللالكتروني : [redacted]
تلفون: [redacted]

Appendix 5: Participant information sheet

Coping responses and self-management strategies for individuals with chronic low back pain following physiotherapy treatment.

You are being invited to take part in a research project. Before you decide whether or not to take part, it is important for you to understand why the research is being undertaken and what it will involve. Please take time to read the following information carefully and discuss it with others, if you wish.

Thank you for reading this.

1. What is the purpose of this research project?

Low back pain is a very common problem and we know that strategies that can be used by people with back pain on their own, known as ‘self-management strategies’, can reduce pain and reduce the number of repeat episodes of back pain. These strategies can be used following a course of treatment or to deal with a new flare up of back pain. Self-management strategies can involve different types of information including exercises, relaxation, and how to deal with pain flare ups.

This project is Carried out by a PhD student, and the aim of this study is to explore what sort of self-management strategies physiotherapists give to people with low back pain following a course of physiotherapy. We are interested in how physiotherapist decided what self-management strategies to give and what format is the most commonly used i.e. paper, web-based for example.

The data we will gather can be used to improve the self-management strategies in the future and will improve patient’s ability to cope with flare ups and independency to manage their back pain.

We are conducting this study alongside getting patients’ opinions regarding the most effective self- management strategies and what they feel are the most helpful.

2. Why have I been invited to take part?

You have been invited because we are looking for Physiotherapist specialist or above (has 10 years experience), currently working in musculoskeletal physiotherapy service. Having treated CLBP patients within the last 6 months. Able to communicate in verbal and written Arabic. Members of staff at Farwaniya Hospital, Physiotherapy department, AL-Farwaniya Governorate, Kuwait.

3. Do I have to take part?

No, your participation in this research project is entirely voluntary and it is up to you to decide whether or not to take part. If you decide to take part, we will discuss the research project with you and ask you to sign a consent form. If you decide not to take part, you do not have to explain your reasons and it will not affect your legal rights.

You are free to withdraw your consent to participate in the research project at any time, without giving a reason, even after signing the consent form.

4. What will taking part involve?

Specialist Physiotherapists would be asked to take part in this study if they are working in Farwaniya Hospital, Physiotherapy department, Kuwait, and currently working in musculoskeletal physiotherapy service and have experience treating CLBP patients within the last 6 months.

You will have to attend on one occasion only. At the beginning of the session you will be asked to sign of a consent form prior to the interview.
At the beginning of your visit, we will explain the study in full, bearing in mind that you are free to withdraw at any time.

All physiotherapists who express an interest in being in the study will be sent a map and directions to the venue and travel expenses can be reimbursed on production of a receipt for journeys to the venue.

You will be asked to complete a sheet giving details such as age, gender, job title. prior to the interview. The interview will ask you questions about self-management strategies that you give to patients following treatment for low back pain. The interview will be held in a private room either in Allied Health University, Physiotherapy department or in a room in the physiotherapy department at Farwaniya hospital at which the physiotherapist works. This should not be lasted more than 60 minutes.

The interview will be audio-recorded by the researcher and only staff of the Cardiff University research team (Valerie Sparkes and Rebecca Hemming) who are involved in the study will have access to the data files. Once I have written notes from the interview the tape recording of the conversation will be destroyed.

5. Will I be paid for taking part?

No. You should understand that any data you give will be as a gift and you will not benefit financially in the future should this research project lead to the development of a new method of delivering Self-Management Strategies

6. What are the possible benefits of taking part?

There will be no direct advantages or benefits to you from taking part, but we hope your contribution will help us to be able to better understand what sort of self-management strategies are delivered to patients with low back pain and the reasons why such strategies are given. There is no intended benefit to the yourselves, but we can inform you of the results of the study which may be of interest to you.

7. What are the possible risks of taking part?

There are no risks in participating in this study as this study is not using any kind of intervention. However, there is a potential of low risk during the time of data collection, such as emotional stress that might pose from you and there also might issues related to safety hazard. Prior to the scheduled interview, the researcher will follow the fire safety guidance for where the interview will take place, in order to keep the risk from fire hazards as minimum as possible for you and for the researcher himself. During the interview, if there is any discomfort or distressed observed from you while talking about self-management strategies, the researcher would like to assure you that he has a clinical background with training and experience in handling such these situations. The researcher will also seek support and guidance from his academic supervisors if needed.

All participants will be screened according to the regulation and policies of Farwaniya Hospital toward COVID-19. This including check for symptoms of high fever and dry cough before starting the scheduled interview.The main researcher and you both will be wearing masks, gloves and keep social distancing as possible.

8. Will my taking part in this research project be kept confidential?

All information collected from (or about) you during the research project will be kept confidential and any personal information you provide will be managed in accordance with data protection legislation. Please see ‘What will happen to my Personal Data?’ (below) for further information.

Any information about you will have your name and address removed so that you cannot be recognised from it. We may share information with external collaborators, but all this information will contain no identifiable information about you. The main researcher will transcribe your interview in Arabic version, then we will use an approved external transcription service to produce an English written script version of your recorded interview. The transcription service will treat all recordings confidentially and will abide by the terms of a confidentiality agreement in place with ministry of Health of the State of Kuwait.

9. What will happen to my Personal Data?

I as the PhD Student will be the only person who will need to use your personal information in this research project. No one else will be able to see your name or contact details. All the data you provide will have a research code number. We will keep all information about you safe and secure in the researcher password protected personal laptop then will placed in a locked filing cabinet in Cardiff University, UK. Once we have finished the study, we will keep some of the data so we can check the results but it will we destroyed after no less than end of project + 5 years or at least 2 years post publication in accordance to Cardiff University. We will write our reports in a way that no-one can work out that you took part in the study.

You should know that Cardiff University is the Data Controller and is committed to respecting and protecting your personal data in accordance with your expectations and Data Protection legislation. Further information about Data Protection, including:

- your rights
- the legal basis under which Cardiff University processes your personal data for research
- Cardiff University's Data Protection Policy
- how to contact the Cardiff University Data Protection Officer
- how to contact the Information Commissioner's Office

may be found at https://www.cardiff.ac.uk/public-information/policies-and-procedures/data-protection

Data will be taken physically to an approved external agency by Kuwait University. The agency will translate your data from the language of Arabic to English, and your anonymous` data then will be kept secured inside the main researcher`s laptop, which is password protected. The data will be placed in a secured and protected locked filing cabinet, and will be using the universities secure (H drive) for back up that is password encrypted.

Immediately after receiving the data from you in the interview it will be anonymised and given a research code number, with the exception of your consent form. The researcher will retain a copy of you contact details in a specific separate encrypted file. This will only be retained for the duration of the project and then will be permanently destroyed.

Your consent form which has your name on it will be retained for 5 years and may be accessed by members of the research team and, where necessary, by members of the University's governance and audit teams or by regulatory authorities. Anonymised data will be kept for a minimum of 5 years or at least 2 years post publication in accordance to Cardiff University , but may be published in support of the research project and/or retained indefinitely, where it is likely to have continuing value for research purposes. Any quotes used in publications will be anonymised and identified by a number and therefore will not be identifiable.

It is your will to change your mind and to withdraw at any stage of the trial. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will use the minimum personally-identifiable information possible.

10. What happens to the data at the end of the research project?

The data will only be used for publication of the PhD thesis and any publications or presentations at conferences that arise from that. The data will be saved for no less than end of project + 5 years or at least 2 years post publication in accordance to Cardiff University. The raw data will not be accessible publicly or be placed in a data repository. No future research will be conducted on the data we collect from you.

11. What will happen to the results of the research project?

It is our intention to publish the results of this research project in a PhD thesis, in physiotherapy journals and may be presented at conferences. We might also use verbatim quotes, but participants will not be identified in any report, publication or presentation.

12. What if there is a problem?

If you wish to complain, or have grounds for concerns about any aspect of the manner in which you have been approached or treated during the course of this research, please contact PT.Nadia Al-Bader, Head of Physiotherapy department at Al-Farwaniya Hospital, Tel: 99728993

Or

(Prof.Valerie Sparkes, [redacted]

If your complaint is not managed to your satisfaction, please contact (School of Healthcare Sciences Director of Research Governance, Dr. Kate Button [redacted]

If you are harmed by taking part in this research project, there are no special compensation arrangements. If you are harmed due to someone's negligence, you may have grounds for legal action, but you may have to pay for it.

13. Who is organising and funding this research project?

The research is organised by Mohammad Mandani, a PhD researcher and by Prof. Valeri Sparkes as academic supervisor. The research for my PhD that is funded by Kuwait Military Attaché office, London, UK.

14. Who has reviewed this research project?

This research project has been reviewed and given a favourable opinion by the research ethics Committee, Cardiff University and by research ethics committee, ministry of Health, Kuwait.

15. Further information and contact details

Should you have any questions relating to this research project, you may contact us during normal working hours:

Mohammad Mandani, PhD Student
School of Healthcare Sciences,
Cardiff University
Eastgate House
Cardiff
CF24 0A3
Email: [redacted]
Tel: [redacted]

Thank you for considering to take part in this research project. If you decide to participate, you will be given a copy of the Participant Information Sheet and a signed consent form to keep for your records.

Appendix 6: Participant information sheet

Coping responses and self-management strategies for individuals with chronic low back pain following physiotherapy treatment.

You are being invited to take part in a research project. Before you decide whether or not to take part, it is important for you to understand why the research is being undertaken and what it will involve. Please take time to read the following information carefully and discuss it with others, if you wish.

Thank you for reading this.

1. What is the purpose of this research project?

Low back pain is a very common problem and we know that strategies used by people with back pain by themselves known as 'self-management strategies', can reduce pain and the number of repeated episodes of back pain. These strategies can be used following a course of treatment or to deal with a new flare up of back pain. Self-management strategies can involve different types of information including exercises, relaxation, and how to deal with pain flare ups.

This project is carried out by a PhD student, Mohammad Mandani. The aim of the study is to explore what strategies people with low back pain use in order to deal with their back pain or new flare-ups following completion of their physiotherapy treatment. We also are interested in what you think about the information that was given to you by the physiotherapists and how it was delivered for example in a paper format or on a website.

The data we gather can be used to improve the self-management strategies that deal with back pain in the future and will improve patient's independence to manage their back pain.

2. Why have I been invited to take part?

You have been invited because we are looking for people aged between 18 and 65 years old and who have had back pain for longer than 3 months. You need to be able to understand written and verbal Arabic and you are going to receive physiotherapy for low back pain in the Physiotherapy Department at Farwaniya Hospital, Kuwait.

3. Do I have to take part?

No, your participation in this research project is entirely voluntary and it is up to you to decide whether or not to take part. If you decide to take part, we will discuss the research project with you and ask you to sign a consent form. If you decide not to take part, you do not have to explain your reasons and it will not affect your legal rights. A decision not to take part or to withdraw at any time will not affect the standard of care you receive.

You are free to withdraw your consent to participate in the research project at any time, without giving a reason, even after signing the consent form.

4. **What will taking part involve?**

We are interested in understanding how you manage your back pain and there are 2 data collection phases that should not span over more than 12 weeks.

Phase 1: before you start your physiotherapy treatment (Maximum two weeks before starting Physiotherapy sessions)
you will fill in questionnaires. The questionnaires are:
(1) Numeric Pain Rating Scale, which measures pain intensity,
(2) Coping strategies questionnaire, this tell us what things you do to reduce your pain
(3) Health anxiety and depression scale, this measures your general anxiety and depression level
(4) Start Back tool, this classifies people expectations of their pain.
(5) Pain self-efficacy, tells us how confident you are dealing with your pain and exercises

For this phase, once the researcher (MM) received a phone call from you that shows your wellness to participate, MM will send the consent form to sign alongside the documents via email or by posting them for you to return. It should take approximately a maximum of 30 minutes to answer them all. The Physiotherapist who is in charge of treating you will notify me via phone call once you have finished your course of treatment. I will then call you and we can together schedule your next visit for an interview according to your preference day/time. This has to be within 4-8 weeks after the physiotherapy course has ended.

Phase 2: is approximately at 4-8 weeks after finishing your physiotherapy treatment, you will sign another consent form for the porpuses of the scheduled interview and for filling in the same questionnaires again. We will arrange an interview in which we will ask you some questions, for example your age, hobbies and main activities and how you manage your back pain and any flare ups and if you have used any other website for information as well as the information that was given to you by the Physiotherapist. In total this may take 1 and a half hours. We will provide refreshments for you during this time.

Before phase 2 all participants will be sent a map and directions to the place where the interview will take place. This will be either Farwaniya Hospital or Allied Health College, Kuwait University.

The interview will be audio-recorded by the researcher and only staff of the Cardiff University research team (Valerie Sparkes and Rebecca Hemming) who are involved in the study will have access to the data files. Once I have written notes from the interview the tape recording of the conversation will be destroyed.

5. Will I be paid for taking part?

No. You should understand that any data you give will be as a gift and you will not benefit financially in the future should this research project lead to the development of a new method of delivering Self-management strategies

6. What are the possible benefits of taking part?

There will be no direct advantages or benefits to you from taking part, but we hope your contribution will help us understand by exploring your experiences of managing back pain and what helps you the best. This leads to a better understanding how best to help people deal with their back pain and any flare ups after completing physiotherapy sessions and reduce pain episodes.

7. What are the possible risks of taking part?

There are no risks in participating in this study as this study is not using any kind of intervention. However, there is a potential of low risk during the time of data collection, such as emotional stress that might pose from you and there also might issues related to safety hazard. Prior to the scheduled interview, the researcher will follow the fire safety guidance for where the interview will take place in the unlikely event that a fire will occur. This is to ensure any fire hazards that may arise are as reduced as possible for you and for the researcher himself. During the interview, if there is any discomfort or distressed observed from you while talking about your low back pain experience and self-management strategies, the researcher would like to assure you he has a clinical background with training and experience in handling such these situations. The researcher will also seek support and guidance from his academic supervisors if needed.

All participants will be screened according to the regulation and policies of Farwaniya Hospital toward COVID-19. This including check for symptoms of high fever and dry cough before starting the scheduled interview.The main researcher and you both will be wearing masks, gloves and keep social distancing as possible.

8. Will my taking part in this research project be kept confidential?

All information collected from you during the research project will be kept confidential and any personal information you provide will be managed in accordance with data protection legislation. Please see ‘What will happen to my Personal Data?’ (below) for further information.

Any information about you will have your name and address removed so that you cannot be recognised from it. The main researcher will transcribe your interview in Arabic version, then we will use an approved external transcription service to produce an English written script version of your recorded interview. The transcription service will treat all recordings confidentially and will abide by the terms of a confidentiality agreement in place with ministry of Health of the State of Kuwait.

9. What will happen to my Personal Data?

I as the PhD Student will be the only person who will need to use your personal information in this research project. No one else will be able to see your name or contact details. All the data you provide will have a research code number. We will keep all information about you safe and secure in the researcher password protected personal laptop then will placed in a locked filing cabinet in Cardiff University, UK. Once we have finished the study, we will keep some of the data so we can check the results but it will be destroyed after no less than end of project + 5 years or at least 2 years post publication in accordance to Cardiff University. We will write our reports in a way that no-one will know that you took part in the study.

You should know that Cardiff University is the Data Controller and is committed to respecting and protecting your personal data in accordance with your expectations and Data Protection legislation. Further information about Data Protection, including:

- your rights
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- Cardiff University's Data Protection Policy
- how to contact the Cardiff University Data Protection Officer
- how to contact the Information Commissioner's Office

may be found at https://www.cardiff.ac.uk/public-information/policies-and-procedures/data-protection

Data will be taken physically to an approved external agency by Kuwait University. The agency will translate your data from the language of Arabic to English, and your anonymous` data then will be kept secured inside the main researcher`s laptop which is password prtotected. The data will be placed in a secured and protected locked filing cabinet and will be using the universities secure (H drive) for back up that is password encrypted.

Immediately after receiving the data from you in the questionnaires and the interview it will be anonymised and given a research code number, with the exception of your consent form. The researcher will retain a copy of you contact details in a specific separate encrypted file so he can contact you to arrange the interview date and send you a reminder. This will only be retained for the duration of the project and then will be permanently destroyed.

Your consent form which has your name on it will be retained for 5 years and may be accessed by members of the research team and, where necessary, by members of the University's governance and audit teams or by regulatory authorities. Anonymised data will be kept for a minimum of 5 years or at least 2 years post publication in accordance to Cardiff University but may be published in support of the research project and/or retained indefinitely, where it is likely to have continuing value for research purposes. Any quotes used in publications or the PhD thesis will be anonymised and identified by a number and therefore will not be identifiable.

It is your will to change your mind and to withdraw at any stage of the trial. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will use the minimum personally-identifiable information as possible.

10. What happens to the data at the end of the research project?

The data will only be used for publication of the PhD thesis and any publications or presentations at conferences that arise from that. The data will be saved for no less than end of project + 5 years or at least 2 years post publication in accordance to Cardiff University, and then destroyed. The raw data will not be accessible publicly or be placed in a data repository. No future research will be conducted on the data we collect from you.

11. What will happen to the results of the research project?

It is our intention to publish the results of this research project in a PhD thesis, in relevant professional journals and may be presented at conferences. We might also use verbatim quotes, but participants will not be able to be identified in any report, publication or presentation.

12. What if there is a problem?

If you wish to complain, or have grounds for concerns about any aspect of the manner in which you have been approached or treated during the course of this research, please contact
PT. Nadia AL-Bader, Head of Physiotherapy department at Al-Farwaniya Hospital,
Tel: 99728993
or
(Prof. Valerie Sparkes, [redacted]
If your complaint is not managed to your satisfaction, please contact (School of Healthcare Sciences Director of Research Governance, Dr. Kate Button [redacted]

If you are harmed by taking part in this research project, there are no special compensation arrangements. If you are harmed due to someone's negligence, you may have grounds for legal action, but you may have to pay for it.

13. Who is organising and funding this research project?

The research is organised by Mohammad Mandani, a PhD researcher and by Prof. Valerie Sparkes as academic supervisor. The research for my PhD that is funded by Kuwait Military Attaché office, London, UK.

14. Who has reviewed this research project?

This research project has been reviewed and given a favourable opinion by the research ethics Committee, Cardiff University and by research ethics committee, ministry of Health, Kuwait.

15. Further information and contact details

Should you have any questions relating to this research project, you may contact us during normal working hours:

Mohammad Mandani, PhD Student
School of Healthcare Sciences,
Cardiff University
Eastgate House
Cardiff
CF24 0A3
Email: [redacted]
Tel: [redacted]

Thank you for considering to take part in this research project. If you decide to participate, you will be given a copy of the Participant Information Sheet and a signed consent form to keep for your records.

Appendix 7: Consent form (participants` questionnaires)

Title of research project: Coping responses and self-management strategies for individuals with chronic low back pain following physiotherapy treatment.

School of Health Care Sciences Research Ethics Committee
Name of Chief/Principal Investigator: Mohammad Mandani, PhD researcher
: Prof. Valerie Sparkes, Academic supervisor

Please initial box

I confirm that I have read the information sheet dated 22/05/2020 version 2 for the above research project.	
I confirm that I have understood the information sheet dated 22/05/2020 version 2 for the above research project and that I have had the opportunity to ask questions and that these have been answered satisfactorily.	
I understand that my participation is voluntary and I am free to withdraw at any time without giving a reason and without any adverse consequences (e.g. to medical care or legal rights, if relevant). I understand that if I withdraw, information about me that has already been obtained may be kept by Cardiff University.	
I understand that data collected during the research project may be looked at by individuals from Cardiff University or from regulatory authorities, where it is relevant to my taking part in the research project. I give permission for these individuals to have access to my data.	
I consent to the processing of my personal information regarding my back pain and my self-management strategies for the purposes explained to me. I understand that such information will be held in accordance with all applicable data protection legislation and in strict confidence, unless disclosure is required by law or professional obligation.	
I understand who will have access to personal information provided, how the data will be stored and what will happen to the data at the end of the research project.	
I understand that after the research project, anonymised data may be presented in PhD thesis, in physiotherapy journals, and might be presented at conferences. I understand that it will not be possible to identify me from this data	

that is seen and used by other researchers, for ethically approved research projects, on the understanding that confidentiality will be maintained.	
I understand that anonymised excerpts/or verbatim quotes from my questionnaires and interviews may be used as part of the research publication.	
I understand how the findings and results of the research project will be written up and published.	
I agree to take part in this research project.	

______________________________	______________________	______________________
Name of participant (print)	Date	Signature

______________________________	______________________	______________________
Name of person taking consent (print)	Date	Signature

____
Role of person taking consent (print)

THANK YOU FOR PARTICIPATING IN OUR RESEARCH

YOU WILL BE GIVEN A COPY OF THIS CONSENT FORM TO KEEP

Appendix 8: Patients' details

Patients Details

Participants number : ....   **Height:**.........   **Weight:**........

What is your age?

☐ 18-24 years old ☐ 25-34 years old ☐ 35-44 years old

☐ 45-54 years old ☐ 55-64 years old ☐ 65-74 years old

Are you ☐ male ☐ female

What is your Martial status?

☐ Single ☐ Living with partner ☐ Married

☐ Divorced or separated ☐ Widowed

Which ethnic group best describes you? (Tick one that applies)

☐ White
☐ Black other
☐ Asian
☐ Arab

☐ Black Caribbean
☐ Indian
☐ Mixed ethnic group
☐ Other Ethnic group ....

☐ Black African
☐ Pakistani
☐ Hispanic or Latino

Education level: (Tick one that applies)

☐ School ☐ College /University ☐ Professional training whilst working

☐ Trade/technical/vocational training ☐ School leavers

Employment Status: (Tick one that applies)

☐ Full time ☐ Part time ☐ Occasional work

Please refer to the next page

Are you currently (Tick all that applies)

☐ Employed ☐ Self-employed ☐ Out of work and looking for work

☐ Out of work but not currently looking for work ☐ A homemaker ☐ A student

☐ Military ☐ Retired ☐ Unable to work due to illness

How long you have you had this episode of back pain for ? (Tick one that applies)

☐ 2 -4 weeks ☐ 4-8 weeks ☐ 8- 12 weeks ☐ more than 12 weeks

How many separate episodes of back pain have you had since your discharge from physiotherapy session? (Tick one that applies)

☐ None ☐ One ☐ 2-4 ☐ 5-7 ☐ 8-10 ☐ more than 10

If in paid employment how many days off have you had because of your back pain? (Tick one that applies)

☐ 0 ☐ 1 week ☐ 2 weeks ☐ 3 weeks ☐ more than 4 weeks

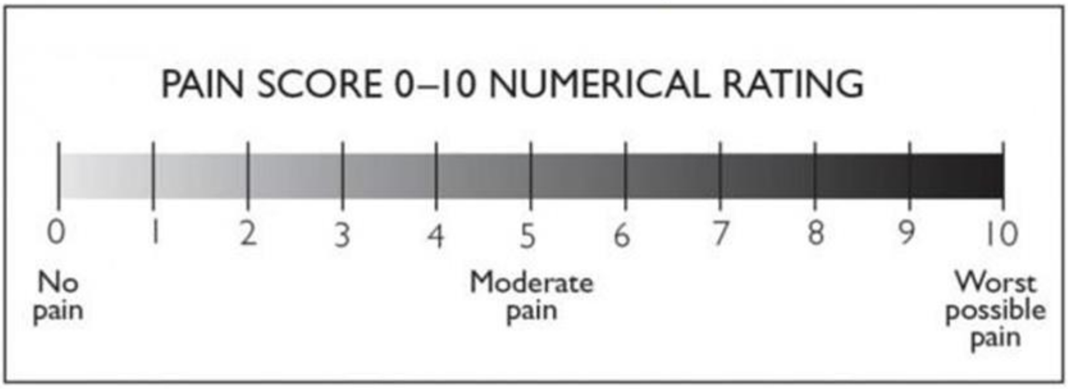
How many physiotherapy sessions you have completed? (Tick one that applies)

☐ 1-3 sessions ☐ 4-7 session ☐ 8-11 sessions ☐ more than 11 sessions

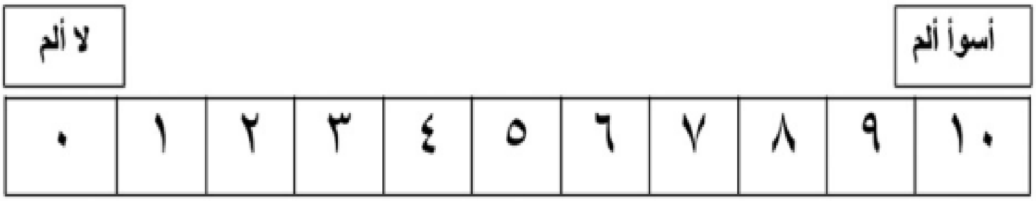
Appendix 9: Numerical Rating Scale

Numerical Rating Scale

This is an 11-point numeric scale (NRS 11) with 0 representing one pain extreme (e.g., “no pain”) and 10 representing the other pain extreme (e.g., “pain as bad as you can imagine” and “worst pain imaginable”). **From (0 to 10) please select the number that best reflects the intensity of your pain.**

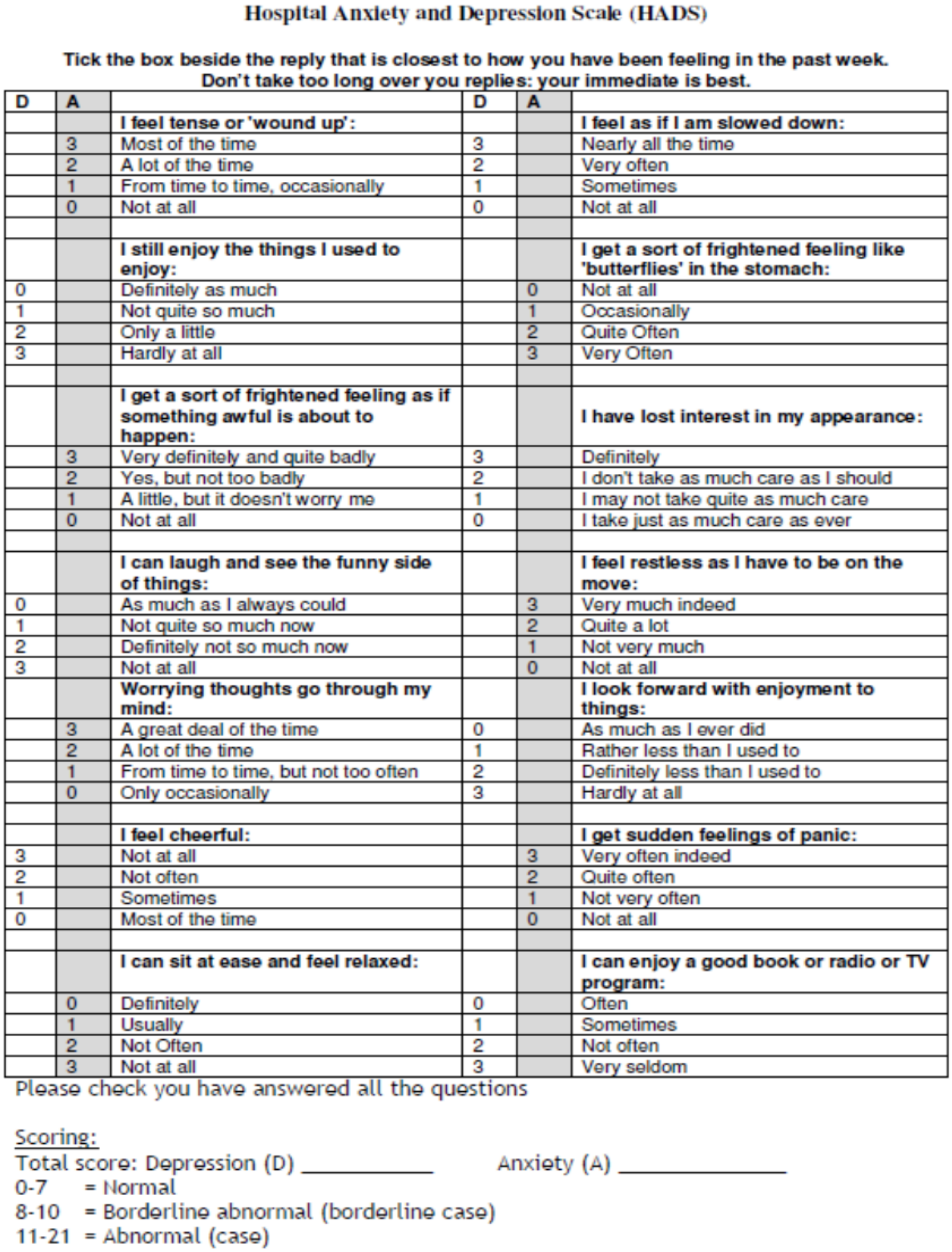


ANPRS



لا ألم										أسوأ ألم
٠	١	٢	٣	٤	٥	٦	٧	٨	٩	١٠

Appendix 10: Hospital Anxiety and Depression Scale



Hospital Anxiety and Depression Scale (HADS)

Tick the box beside the reply that is closest to how you have been feeling in the past week.
Don't take too long over you replies: your immediate is best.

D	A		D	A	
		I feel tense or 'wound up':			**I feel as if I am slowed down:**
	3	Most of the time	3		Nearly all the time
	2	A lot of the time	2		Very often
	1	From time to time, occasionally	1		Sometimes
	0	Not at all	0		Not at all
		I still enjoy the things I used to enjoy:			**I get a sort of frightened feeling like 'butterflies' in the stomach:**
0		Definitely as much		0	Not at all
1		Not quite so much		1	Occasionally
2		Only a little		2	Quite Often
3		Hardly at all		3	Very Often
		I get a sort of frightened feeling as if something awful is about to happen:			**I have lost interest in my appearance:**
	3	Very definitely and quite badly	3		Definitely
	2	Yes, but not too badly	2		I don't take as much care as I should
	1	A little, but it doesn't worry me	1		I may not take quite as much care
	0	Not at all	0		I take just as much care as ever
		I can laugh and see the funny side of things:			**I feel restless as I have to be on the move:**
0		As much as I always could		3	Very much indeed
1		Not quite so much now		2	Quite a lot
2		Definitely not so much now		1	Not very much
3		Not at all		0	Not at all
		Worrying thoughts go through my mind:			**I look forward with enjoyment to things:**
	3	A great deal of the time	0		As much as I ever did
	2	A lot of the time	1		Rather less than I used to
	1	From time to time, but not too often	2		Definitely less than I used to
	0	Only occasionally	3		Hardly at all
		I feel cheerful:			**I get sudden feelings of panic:**
3		Not at all		3	Very often indeed
2		Not often		2	Quite often
1		Sometimes		1	Not very often
0		Most of the time		0	Not at all
		I can sit at ease and feel relaxed:			**I can enjoy a good book or radio or TV program:**
	0	Definitely	0		Often
	1	Usually	1		Sometimes
	2	Not Often	2		Not often
	3	Not at all	3		Very seldom

Please check you have answered all the questions

Scoring:

Total score: Depression (D) ___________ Anxiety (A) _______________

0-7 = Normal
8-10 = Borderline abnormal (borderline case)
11-21 = Abnormal (case)

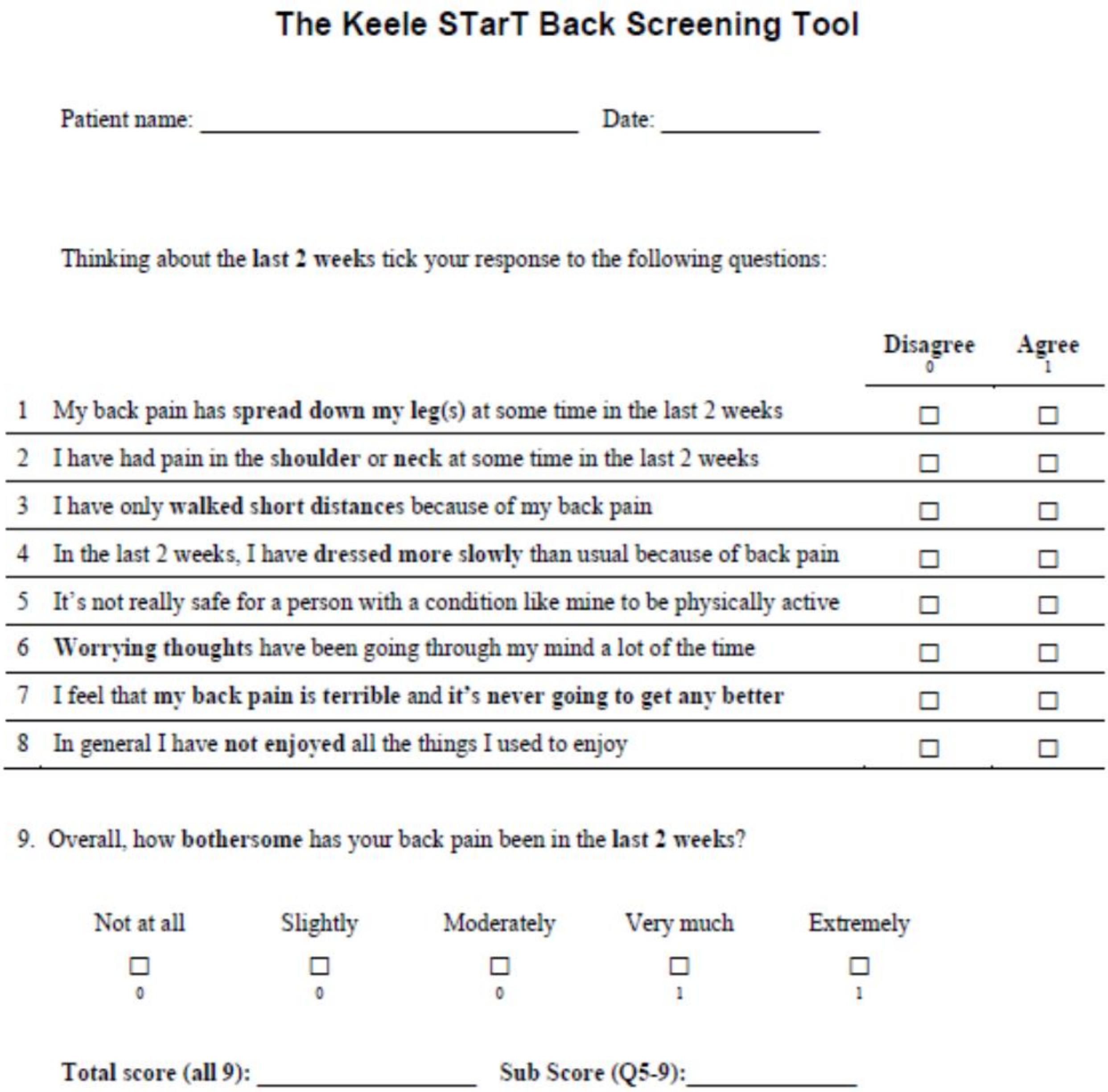
Hospital Anxiety and Depression Scale (Arabic Version)

هذا الاستبيان يساعد الطبيب لمعرفة مشاعرك وقراءة أحاسيسك ، لذا يرجى إحاطة الرقم الموازي لأفضل اختيار يصف حالتك خلال الأسبوع الماضي. ليس من المطلوب الاستغراق في التفكير لإختيار الإجابة، وإنما تفضل الإجابات العفوية التلقائية.

من فضلك، قم بإختيار الإجابة المناسبة بوضع دائرة عليها:			Hospital Anxiety Depression Scale (HADS):		
	أحس بأني هامد (فاقد للطاقة) :	D		أشعر بالتوتر الشديد:	A
3	• تقريباً في كل وقت		3	• أكثر الوقت	
2	• في كثير من الأحيان		2	• عدة مرات	
1	• في بعض الأوقات		1	• أحياناً	
0	• لا أشعر بذلك مطلقاً		0	• لا أشعر بذلك مطلقاً	
	ينتابني شعور بالخوف:	A		أنا لازلت أتمتع بالأشياء التي اعتدت أن أستمتع بها:	D
0	• لا، على الإطلاق		0	• بالتأكيد، كما كنت	
1	• أحياناً		1	• ليس تماماً	
2	• كثيراً		2	• قليلاً	
3	• في أغلب الأوقات		3	• بالكاد، على الإطلاق	
	لقد فقدت الإهتمام بمظهري:	D		أشعر بنوع من الخوف, وكأن شيئا مروعا على وشك الحدوث:	A
3	• بالتأكيد فقدت كل الاهتمام		3	• بالتأكيد، وبشكل مزعج	
2	• أنا لا أهتم بمظهري كما يجب أن أهتم		2	• نعم، ولكن اقل سوءاً	
1	• قد لا أعتني بمظهري كما يجب		1	• قليلاً، لكنه لا يقلقني	
0	• أعتني بمظهري بشكل جيد كما كنت سابقا		0	• لا أشعر بذلك على الاطلاق	
	الإحساس بضيقة الصدر دون مجهود جسدي:	A		أستطيع الضحك و رؤية الجوانب الممتعة في الاشياء:	D
3	• في الواقع، كثيراً جداً		0	• كما كنت سابقا	
2	• كثيراً، لابأس به		1	• اقل مما كنت سابقا	
1	• أشعر بذلك قليلاً		2	• بالتأكيد، ليس كثيراً الآن	
0	• لا أشعر بذلك على الإطلاق		3	• لا أشعر بذلك على الإطلاق	
	أنا أتطلع للأشياء من حولي باستمتاع:	D		تأتيني دائما افكار مقلقة:	A
0	• بقدر ما يمكنني فعله		3	• أغلب الأوقات	
1	• نوعا ما أقل مما اعتدت على فعله		2	• معظم الأوقات	
2	• بالتأكيد أقل مما اعتدت على فعلة		1	• من وقت لآخر، ولكن ليس كثيراً	
3	• لا، على الإطلاق		0	• أحيانا	
	ينتابني إحساس مفاجئ بالهلع:	A		أشعر بالبهجة:	D
3	• في الواقع، في كثير من الأحيان		3	• لا، على الإطلاق	
2	• غالباً		2	• ليس كثيراً	
1	• ليس كثيراً		1	• في بعض الأحيان	
0	• لا أشعر بذلك على الإطلاق		0	• في أغلب الأوقات	
	يمكنني الإستمتاع بقراءة كتاب جيد أو مشاهدة البرامج التلفزيونية أو الإستماع إلى الإذاعة:	D		يمكنني الجلوس براحة و الشعور بالاسترخاء:	A
0	• غالباً		0	• بكل التأكيد	
1	• في بعض الأحيان		1	• عادة ما	
2	• ليس كثيراً		2	• ليس كثيراً	
3	• نادراً جداً		3	• لا يمكنني ذلك على الإطلاق	

Terkawi et al. Arabic version of (Hospital Anxiety Depression Scale "HADS") Page 1 of 1

Appendix 11: The STarT Back Screening tool



The Keele STarT Back Screening Tool

Patient name: ______________________________ Date: ____________

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

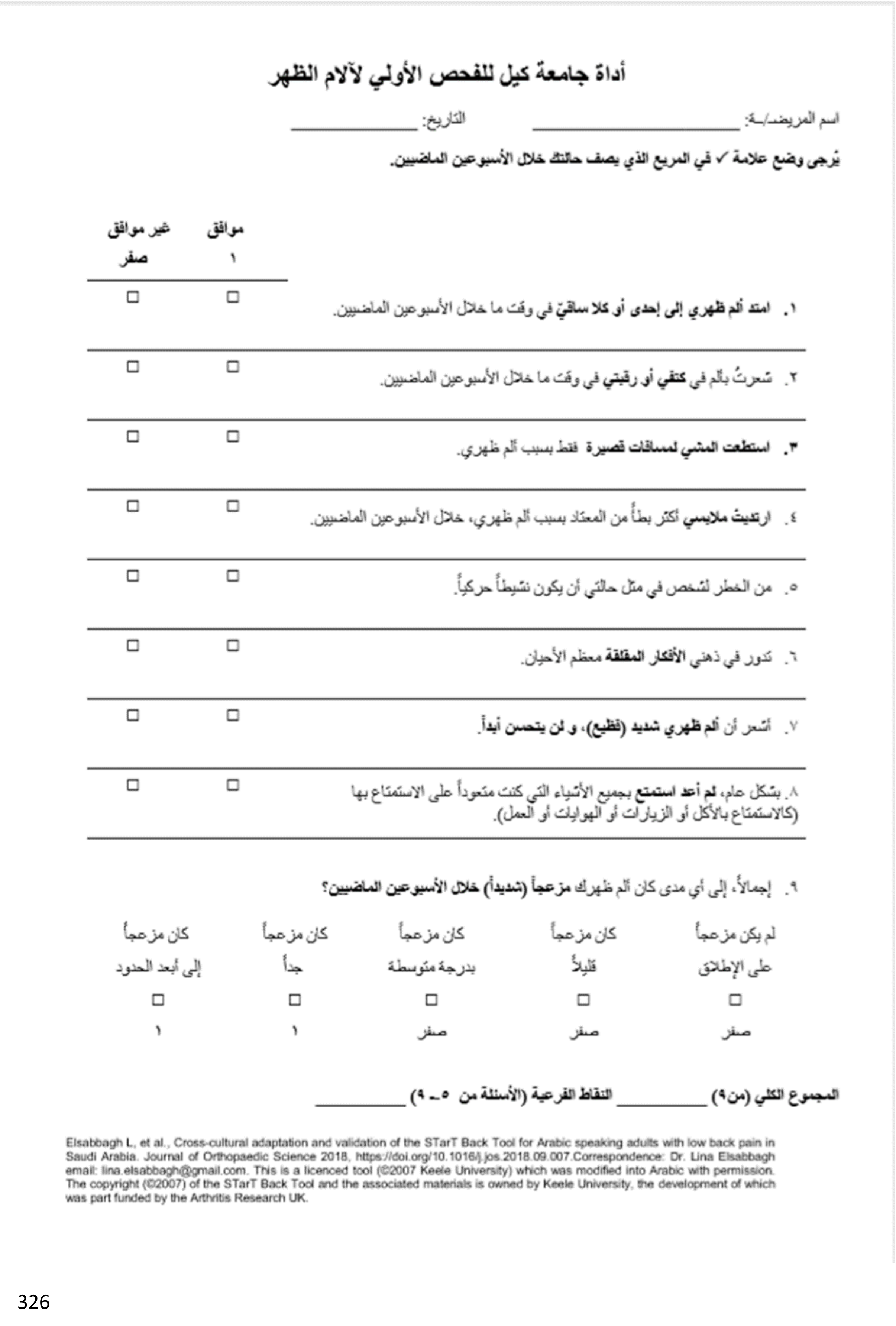
		Disagree 0	Agree 1
1	My back pain has **spread down my leg**(s) at some time in the last 2 weeks	☐	☐
2	I have had pain in the **shoulder** or **neck** at some time in the last 2 weeks	☐	☐
3	I have only **walked short distances** because of my back pain	☐	☐
4	In the last 2 weeks, I have **dressed more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

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

Not at all	Slightly	Moderately	Very much	Extremely
☐	☐	☐	☐	☐
0	0	0	1	1

Total score (all 9): ________________ **Sub Score (Q5-9):**_____________

STarT Back screening tool (Arabic version)



أداة جامعة كيل للفحص الأولي لآلام الظهر

اسم المريض/ـة: ____________________ التاريخ: ____________

يُرجى وضع علامة ✓ في المربع الذي يصف حالتك خلال الأسبوعين الماضيين.

	موافق ١	**غير موافق** **صفر**
١. **امتد ألم ظهري إلى إحدى أو كلا ساقيّ** في وقت ما خلال الأسبوعين الماضيين.	☐	☐
٢. شعرتُ بألم في **كتفي أو رقبتي** في وقت ما خلال الأسبوعين الماضيين.	☐	☐
٣. استطعت المشي لمسافات قصيرة فقط بسبب ألم ظهري.	☐	☐
٤. **ارتديتُ ملابسي** أكثر بطأً من المعتاد بسبب ألم ظهري، خلال الأسبوعين الماضيين.	☐	☐
٥. من الخطر لشخص في مثل حالتي أن يكون نشيطاً حركياً.	☐	☐
٦. تدور في ذهني **الأفكار المقلقة** معظم الأحيان.	☐	☐
٧. أشعر أن **ألم ظهري شديد (فظيع)، و لن يتحسن أبداً.**	☐	☐
٨. بشكل عام، **لم أعد استمتع** بجميع الأشياء التي كنت متعوداً على الاستمتاع بها (كالاستمتاع بالأكل أو الزيارات أو الهوايات أو العمل).	☐	☐

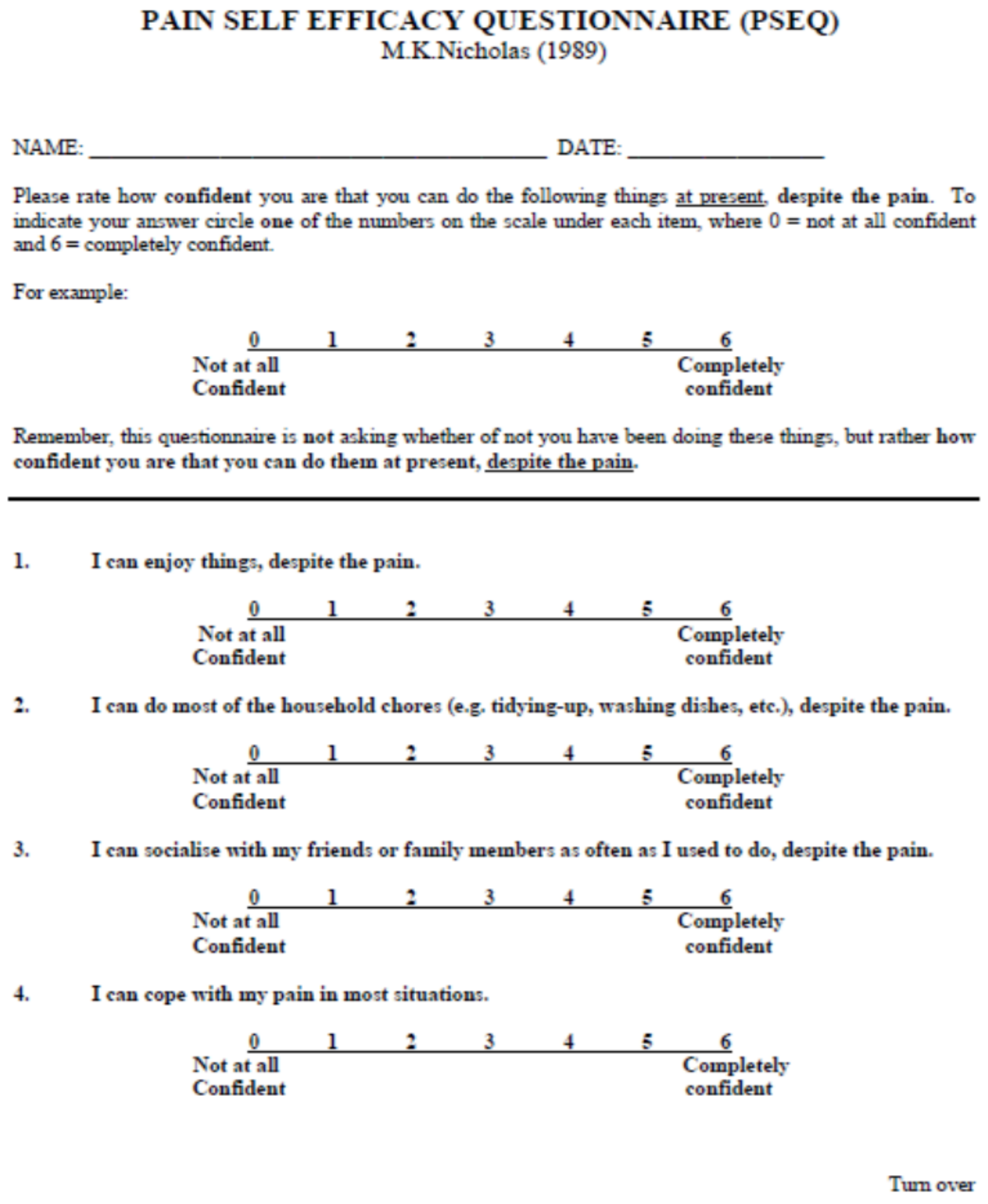
٩. إجمالاً، إلى أي مدى كان ألم ظهرك **مزعجاً (شديداً) خلال الأسبوعين الماضيين؟**

لم يكن مزعجاً على الإطلاق	كان مزعجاً قليلاً	كان مزعجاً بدرجة متوسطة	كان مزعجاً جداً	كان مزعجاً إلى أبعد الحدود
☐	☐	☐	☐	☐
صفر	صفر	صفر	١	١

المجموع الكلي (من٩) __________ **النقاط الفرعية (الأسئلة من ٥ــ ٩)** __________

Elsabbagh L, et al., Cross-cultural adaptation and validation of the STarT Back Tool for Arabic speaking adults with low back pain in Saudi Arabia. Journal of Orthopaedic Science 2018, https://doi.org/10.1016/j.jos.2018.09.007.Correspondence: Dr. Lina Elsabbagh email: lina.elsabbagh@gmail.com. This is a licenced tool (©2007 Keele University) which was modified into Arabic with permission. The copyright (©2007) of the STarT Back Tool and the associated materials is owned by Keele University, the development of which was part funded by the Arthritis Research UK.

Appendix 12: Pain Self-efficacy Questionnaire



PAIN SELF EFFICACY QUESTIONNAIRE (PSEQ)

M.K.Nicholas (1989)

NAME: ______________________________ DATE: ______________

Please rate how **confident** you are that you can do the following things at present, **despite the pain**. To indicate your answer circle **one** of the numbers on the scale under each item, where 0 = not at all confident and 6 = completely confident.

For example:

0 1 2 3 4 5 6

Not at all Confident **Completely confident**

Remember, this questionnaire is **not** asking whether of not you have been doing these things, but rather **how confident you are that you can do them at present, despite the pain.**

---

1. **I can enjoy things, despite the pain.**

0 1 2 3 4 5 6

Not at all Confident **Completely confident**

2. **I can do most of the household chores (e.g. tidying-up, washing dishes, etc.), despite the pain.**

0 1 2 3 4 5 6

Not at all Confident **Completely confident**

3. **I can socialise with my friends or family members as often as I used to do, despite the pain.**

0 1 2 3 4 5 6

Not at all Confident **Completely confident**

4. **I can cope with my pain in most situations.**

0 1 2 3 4 5 6

Not at all Confident **Completely confident**

Turn over

5. I can do some form of work, despite the pain. ("work" includes housework, paid and unpaid work).

0	1	2	3	4	5	6
Not at all Confident						Completely confident

6. I can still do many of the things I enjoy doing, such as hobbies or leisure activity, despite pain.

0	1	2	3	4	5	6
Not at all Confident						Completely confident

7. I can cope with my pain without medication.

0	1	2	3	4	5	6
Not at all Confident						Completely confident

8. I can still accomplish most of my goals in life, despite the pain.

0	1	2	3	4	5	6
Not at all Confident						Completely confident

9. I can live a normal lifestyle, despite the pain.

0	1	2	3	4	5	6
Not at all Confident						Completely confident

10. I can gradually become more active, despite the pain.

0	1	2	3	4	5	6
Not at all Confident						Completely confident

Pain Self-efficacy Questionnaire (Arabic version)

استبيان الكفاءه الذاتيه للألم

الاسم: التاريخ:

برجاء تقدير مدى ثقتك في قدرتك على القيام بالأشياء التالية في الوقت الحاضر، بالرغم من الشعور بالألم.

لتحديد إجابتك، ضع دائرة حول إحدى الأرقام على المقياس تحت كل بند، حيث أن 0 = عدم الثقة على الأطلاق و6 = الثقة التامة

0 1 2 3 4 5 6

غير واثق على الاطلاق ... واثق تمامًا

تذكر، بأن هذا الاستبيان لا يتساءل عما إذا كنت تقوم بهذه الأشياء أو لا بل بالأحرى عن مدى ثقتك في قدرتك بالقيام بها في الوقت الحاضر بالرغم من الشعور بالألم

1. استمتع بالأشياء بالرغم من الشعور بالألم

0 1 2 3 4 5 6

غير واثق على الاطلاق ... واثق تمامًا

2. يمكنني القيام بمعظم الاعمال المنزلية (على سبيل المثال، الترتيب وغسيل الأطباق وما إلى ذلك)

0 1 2 3 4 5 6

غير واثق على الاطلاق ... واثق تمامًا

3. أستطيع الاختلاط بزملائي أو أفراد اسرتي بقدرما اعتدت على ذلك، بالرغم من الشعوربالألم

0 1 2 3 4 5 6

غير واثق على الاطلاق ... واثق تمامًا

4. أستطيع التأقلم مع شعوري بالألم في معظم المو اقف

0 1 2 3 4 5 6

غير واثق على الاطلاق ... واثق تمامًا

5. يمكنني القيام ببعض اشكال العمل، بالرغم من الشعوربالألم ("عمل" يتضمن الأعمال المنزلية والعمل مدفوع الأجروغير المدفوع).

0 1 2 3 4 5 6

غير واثق على الاطلاق ... واثق تمامًا

6. لا زلت يمكنني القيام بالعديد من الأشياء التي استمتع بها، مثل الهو ايات و انشطة الرفاهية، بالرغم من الشعوربالألم

0 1 2 3 4 5 6

غير واثق على الاطلاق ... واثق تمامًا

7.أستطيع التأقلم مع الشعوربالألم بدون الأدوية.

0 1 2 3 4 5 6

غير واثق على الاطلاق ... واثق تمامًا

8. لا زلت أستطيع تحقيق معظم اهدافي في الحياة بالرغم من الشعوربالألم.

0 1 2 3 4 5 6

غير واثق على الاطلاق ... واثق تمامًا

9. يمكنني العيش بأسلوب حياة طبيعي بالرغم من الشعوربالألم.

0 1 2 3 4 5 6

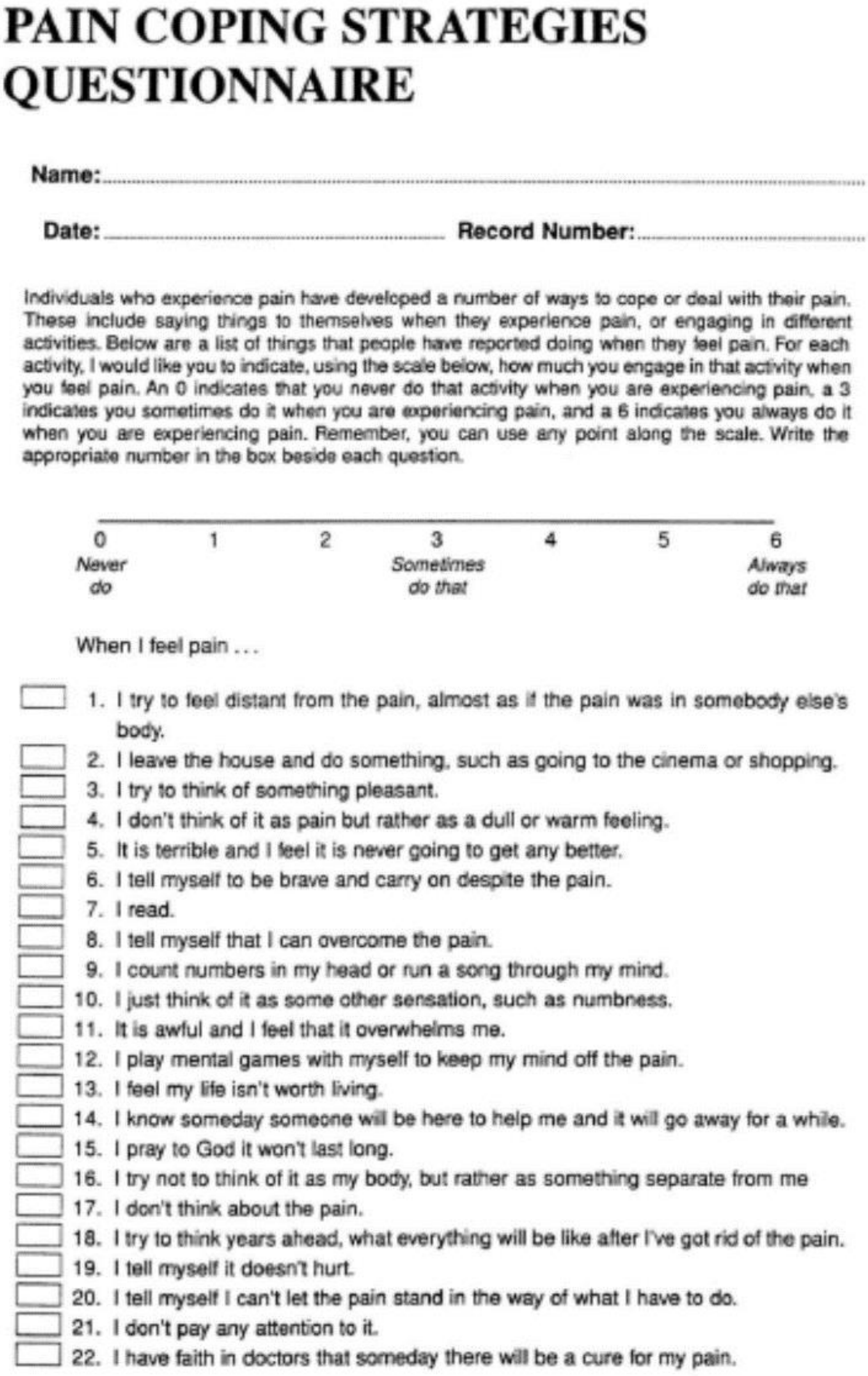
غير واثق على الاطلاق ... واثق تمامًا

10. يمكنني أن أصبح أكثرنشاطًا تدريجيًا، بالرغم من الشعوربالألم

0 1 2 3 4 5 6

غير واثق على الاطلاق ... واثق تمامًا

Appendix 13: Pain Coping Strategies Questionnaire



PAIN COPING STRATEGIES QUESTIONNAIRE

Name:...

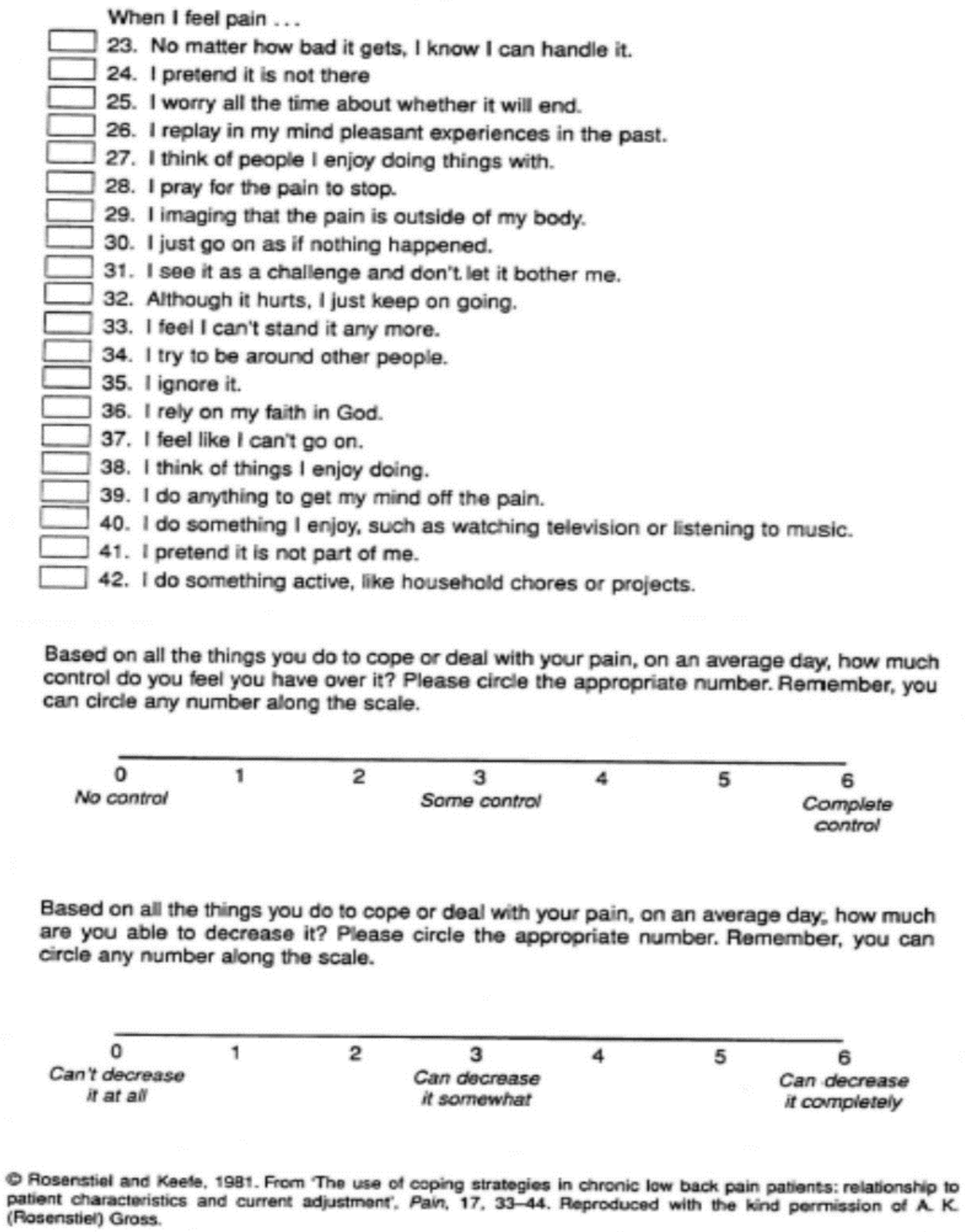
Date: ______________________ **Record Number:**..............................

Individuals who experience pain have developed a number of ways to cope or deal with their pain. These include saying things to themselves when they experience pain, or engaging in different activities. Below are a list of things that people have reported doing when they feel pain. For each activity, I would like you to indicate, using the scale below, how much you engage in that activity when you feel pain. An 0 indicates that you never do that activity when you are experiencing pain, a 3 indicates you sometimes do it when you are experiencing pain, and a 6 indicates you always do it when you are experiencing pain. Remember, you can use any point along the scale. Write the appropriate number in the box beside each question.

0	1	2	3	4	5	6
Never do			*Sometimes do that*			*Always do that*

When I feel pain . . .

☐ 1. I try to feel distant from the pain, almost as if the pain was in somebody else's body.
☐ 2. I leave the house and do something, such as going to the cinema or shopping.
☐ 3. I try to think of something pleasant.
☐ 4. I don't think of it as pain but rather as a dull or warm feeling.
☐ 5. It is terrible and I feel it is never going to get any better.
☐ 6. I tell myself to be brave and carry on despite the pain.
☐ 7. I read.
☐ 8. I tell myself that I can overcome the pain.
☐ 9. I count numbers in my head or run a song through my mind.
☐ 10. I just think of it as some other sensation, such as numbness.
☐ 11. It is awful and I feel that it overwhelms me.
☐ 12. I play mental games with myself to keep my mind off the pain.
☐ 13. I feel my life isn't worth living.
☐ 14. I know someday someone will be here to help me and it will go away for a while.
☐ 15. I pray to God it won't last long.
☐ 16. I try not to think of it as my body, but rather as something separate from me
☐ 17. I don't think about the pain.
☐ 18. I try to think years ahead, what everything will be like after I've got rid of the pain.
☐ 19. I tell myself it doesn't hurt.
☐ 20. I tell myself I can't let the pain stand in the way of what I have to do.
☐ 21. I don't pay any attention to it.
☐ 22. I have faith in doctors that someday there will be a cure for my pain.



When I feel pain . . .

☐ 23. No matter how bad it gets, I know I can handle it.
☐ 24. I pretend it is not there
☐ 25. I worry all the time about whether it will end.
☐ 26. I replay in my mind pleasant experiences in the past.
☐ 27. I think of people I enjoy doing things with.
☐ 28. I pray for the pain to stop.
☐ 29. I imaging that the pain is outside of my body.
☐ 30. I just go on as if nothing happened.
☐ 31. I see it as a challenge and don't let it bother me.
☐ 32. Although it hurts, I just keep on going.
☐ 33. I feel I can't stand it any more.
☐ 34. I try to be around other people.
☐ 35. I ignore it.
☐ 36. I rely on my faith in God.
☐ 37. I feel like I can't go on.
☐ 38. I think of things I enjoy doing.
☐ 39. I do anything to get my mind off the pain.
☐ 40. I do something I enjoy, such as watching television or listening to music.
☐ 41. I pretend it is not part of me.
☐ 42. I do something active, like household chores or projects.

Based on all the things you do to cope or deal with your pain, on an average day, how much control do you feel you have over it? Please circle the appropriate number. Remember, you can circle any number along the scale.

0	1	2	3	4	5	6
No control			*Some control*			*Complete control*

Based on all the things you do to cope or deal with your pain, on an average day, how much are you able to decrease it? Please circle the appropriate number. Remember, you can circle any number along the scale.

0	1	2	3	4	5	6
Can't decrease it at all			*Can decrease it somewhat*			*Can decrease it completely*

© Rosenstiel and Keefe, 1981. From 'The use of coping strategies in chronic low back pain patients: relationship to patient characteristics and current adjustment', *Pain*, 17, 33–44. Reproduced with the kind permission of A. K. (Rosenstiel) Gross.

The Arabic Pain Coping Strategies Questionnaire (ArPCSQ)

استراتيجيات التعامل مع الألم

الأشخاص الذين يشعرون بالألم توصلوا لمجموعة من الطرق للتعود او التعامل مع الألم. هذه الطرق تتضمن قول عبارات معينة للنفس أثناء احساسهم بالألم، او الانشغال بنشاطات مختلفة. القائمة أدناه تضم أشياء ذكرها أشخاص عند إحساسهم بالألم. أريد منك أن تقوم بتقييم (باستخدام المعيار المذكور ادناه) مدى قيامك بكل نشاط من الأنشطة المذكوره أدناه عند شعورك بالألم.

رقم 0 يدل على عدم ممارستك للنشاط. الرقم 3 يدل على قيامك بذلك النشاط بعض الأحيان و الرقم 6 يدل على قيامك بذلك النشاط دائما. تذكر يمكنك إختيار أي رقم يناسبك من المعيار المذكور وذكر ذلك الرقم بجانب النشاط.

0	1	2	3	4	5	6
لا أزاول النشاط مطلقاً			زاولته بعض الأحيان			اقوم به دائماً

عندما أشعر بالألم .....

		لا أزاول النشاط مطلقاً			زاولته بعض الأحيان			اقوم به دائماً
1	أحاول أن أبعد تفكيري عن الألم كما لو أنه كان في جسد شخص آخر.	0	1	2	3	4	5	6
2	أخرج من المنزل و اقوم بنشاطات أخرى كالذهاب للسينما او التسوق.	0	1	2	3	4	5	6
3	افكر بشيء يسعدني.	0	1	2	3	4	5	6
4	لا أفكر فيه كألم وإنما كشعور غير واضح لا أستطيع وصفه.	0	1	2	3	4	5	6
5	انه مزعج واشعر بأنه لن يتحسن ابداً.	0	1	2	3	4	5	6
6	اقول لنفسي انني شجاع و استطيع المواصلة رغم الألم.	0	1	2	3	4	5	6
7	اقوم بالقراءة.	0	1	2	3	4	5	6
8	اقول لنفسي انني استطيع التغلب على الألم.	0	1	2	3	4	5	6
9	اقوم بتعداد الارقام او بالغناء ببالي.	0	1	2	3	4	5	6
10	اقوم بالتفكير به على انه شعور اخر، كالشعور بالتنمل.	0	1	2	3	4	5	6
11	انه مفزع واشعر انه يتغلب علي.	0	1	2	3	4	5	6
12	اشغل بالي لابعد تفكيري عن الألم.	0	1	2	3	4	5	6
13	اشعر بأن هناك لا داعي لمواصله حياتي.	0	1	2	3	4	5	6
14	أحلم بأن يوماً ما، شخص ما سيكون حولي لمساعدتي و سيذهب الالم لفترة معينة.	0	1	2	3	4	5	6
15	ادعي ربي لأن لا يستمر الألم طويلاً.	0	1	2	3	4	5	6
16	أحاول التفكير بانه ليس جسدي وكأنه شيء منفصل عني.	0	1	2	3	4	5	6
17	لا أفكر بالألم.	0	1	2	3	4	5	6
18	أحاول التفكير بالسنوات القادمة وكيف ستكون حياتي بعد التخلص من الألم.	0	1	2	3	4	5	6
19	اقول لنفسي أنه لا يؤلم.	0	1	2	3	4	5	6
20	اقول لنفسي، لا يمكنني ان اجعل الألم أن يقف عائقاً بيني وبين ما يجب علي القيام به.	0	1	2	3	4	5	6
21	لا أعيره أي أهتمام.	0	1	2	3	4	5	6
22	اثق بأن الأطباء سيجدون حلاً لألمي يوماً ما.	0	1	2	3	4	5	6
23	بغض النظر عن سوء الألم أعرف انه بإمكاني التعامل معه.	0	1	2	3	4	5	6
24	أتغاضى عن وجوده.	0	1	2	3	4	5	6
25	أقلق دائماً اذا ما كان سيزول.	0	1	2	3	4	5	6

		لا أزاول النشاط مطلقاً			أزاوله بعض الأحيان			أقوم به دائماً
26	أسترجع في مخيلتي ذكريات مسليه من السابق.	0	1	2	3	4	5	6
27	افكر بأشخاص استمتع بقضاء الوقت معهم.	0	1	2	3	4	5	6
28	أصلي من أجل أن يتوقف الألم.	0	1	2	3	4	5	6
29	أتخيل بأن الألم خارج جسدي.	0	1	2	3	4	5	6
30	أقوم بمواصلة حياتي كما لو لم يحدث شيء.	0	1	2	3	4	5	6
31	اراه كتحدي ولن أجعله يزعجني.	0	1	2	3	4	5	6
32	بالرغم من الألم أستمر.	0	1	2	3	4	5	6
33	أشعر بأني لا أستطيع التحمل أكثر.	0	1	2	3	4	5	6
34	أحاول أن أكون برفقة أشخاص آخرين.	0	1	2	3	4	5	6
35	أتجاهله.	0	1	2	3	4	5	6
36	أعتمد على ايماني بالله سبحانه و تعالى.	0	1	2	3	4	5	6
37	أشعر انني لا استطيع الاستمرار.	0	1	2	3	4	5	6
38	أفكر بأشياء أستمتع القيام بها.	0	1	2	3	4	5	6
39	أفعل أي شيء للتوقف عن التفكير في الألم.	0	1	2	3	4	5	6
40	أقوم بنشاط استمتع به، كمشاهدة التلفاز أو سماع الموسيقى.	0	1	2	3	4	5	6
41	أتظاهر أنه ليس جزء مني.	0	1	2	3	4	5	6
42	أقوم بنشاطات حيوية، كالأعمال المنزلية أو مشاريع اخرى.	0	1	2	3	4	5	6

بناء على الأشياء التي تقوم بها للتعامل والتغلب على الألم، في يومك المعتاد، ما هي قدرتك على السيطرة على الألم؟ الرجاء القيام بأختيار أكثر رقم يناسبك من المعيار المذكورة أدناه. تذكر يمكنك إختيار أي رقم يناسبك من المعيار المذكور.

0	1	2	3	4	5	6
لا أملك أي سيطرة			بعض السيطرة			سيطرة كاملة

بناء على الأشياء التي تقوم بها للتعامل والتغلب على الألم، في يومك المعتاد، ما هي قدرتك على تخفيف الألم؟ الرجاء القيام بأختيار أكثر رقم يناسبك من المعيار المذكورة أدناه. تذكر يمكنك إختيار أي رقم يناسبك من المعيار المذكور.

0	1	2	3	4	5	6
لا أملك أي سيطرة			بعض السيطرة			سيطرة كاملة

Maki, Dana, et al. "The Coping Strategies Questionnaire in an Arabic low back pain population." ***Pain and Rehabilitation-the Journal of Physiotherapy Pain Association*** **2018.45 (2018): 25-37.**

Appendix 14: Consent form (participants' interview)

Title of research project: Coping responses and self-management strategies for individuals with chronic low back pain following physiotherapy treatment.

School of Health Care Sciences Research Ethics Committee
Name of Chief/Principal Investigator: Mohammad Mandani, PhD researcher
: Prof. Valerie Sparkes, Academic supervisor

Please initial box

I confirm that I have read the information sheet dated 22/05/2020 version 2 for the above research project.	
I confirm that I have understood the information sheet dated 22/05/2020 version 2 for the above research project and that I have had the opportunity to ask questions and that these have been answered satisfactorily.	
I understand that my participation is voluntary and I am free to withdraw at any time without giving a reason and without any adverse consequences, e.g. to medical care or legal rights, if relevant). I understand that if I withdraw, information about me that has already been obtained may be kept by Cardiff University.	
I understand that data collected during the research project may be looked at by individuals from Cardiff University or from regulatory authorities, where it is relevant to my taking part in the research project. I give permission for these individuals to have access to my data.	
I consent to the processing of my personal information regarding my back pain and my self-management strategies for the purposes explained to me. I understand that such information will be held in accordance with all applicable data protection legislation and in strict confidence, unless disclosure is required by law or professional obligation.	
I understand who will have access to personal information provided, how the data will be stored and what will happen to the data at the end of the research project.	

I understand that after the research project, anonymised data may be presented in PhD thesis, in physiotherapy journals, and might be presented at conferences. I understand that it will not be possible to identify me from this data that is seen and used by other researchers, for ethically approved research projects, on the understanding that confidentiality will be maintained.	
I consent to being audio recorded taken for the purposes of the research project and I understand how it will be used in the research.	
I understand that anonymised excerpts and/or verbatim quotes from my questionnaires and interviews may be used as part of the research publication.	
I understand how the findings and results of the research project will be written up and published.	
I agree to take part in this research project.	

______________________________ ______________________ ______________________

Name of participant (print)	Date	Signature

______________________________ ______________________ ______________________

Name of person taking consent (print)	Date	Signature

____

Role of person taking consent (print)

THANK YOU FOR PARTICIPATING IN OUR RESEARCH

YOU WILL BE GIVEN A COPY OF THIS CONSENT FORM TO KEEP

Appendix 15: Patients' interview schedule

A) The first section we got is about your BP

1) How long have you had back pain for?
2) Do you know how it started?
   a. Have you had previous episode?
   b. How many times have you been referred to PT?
3) Would you please tell me if your LBP affects you either at work or during everyday activities including habits?

B) Now let's move to the second section which is about advice you have been given by PT

4) Have you found the advice given by the physio to you to manage your back helpful?
   a. yes; please tell me why
   b. no; please tell me why.
5) What do you think the words self-management strategies mean to you?
6) have you been given sheet of paper? Or Advised to install a certain mobile app? get to certain website or YouTube? To self-manage your pain.
   a. Did you understand what each exercise useful for?
   b. Do you know how to progress each given exercise?
   c. Do you know for how long you are going to do the given exercises?
7) What the most thing do you prefer? Mobile app? Sheet of paper? Verbally? Website? and why ?
8) Tell me about any things that you do to help/ease the pain.

C) Now we are in the last section which is about how you manage your back pain and flare up.

9) Once you have given the self-management strategies, do you find time to exercise?
   a. yes; could you please tell me when?
   b. No; why?
10) If your back flared up again, with all the advice you have been given, do you think you are confident to be able to manage the pain?
    a. yes; tell me what you would do, please.
    b. no;
       i. tell why you are not confident that you are able to manage it.
       ii. What other things do you think you would need to make you able to self-manage the pain.

11) What are the key things that motivated you to continue with all given exercises?

12) What are things that makes you unable to do your exercises or hindered you?

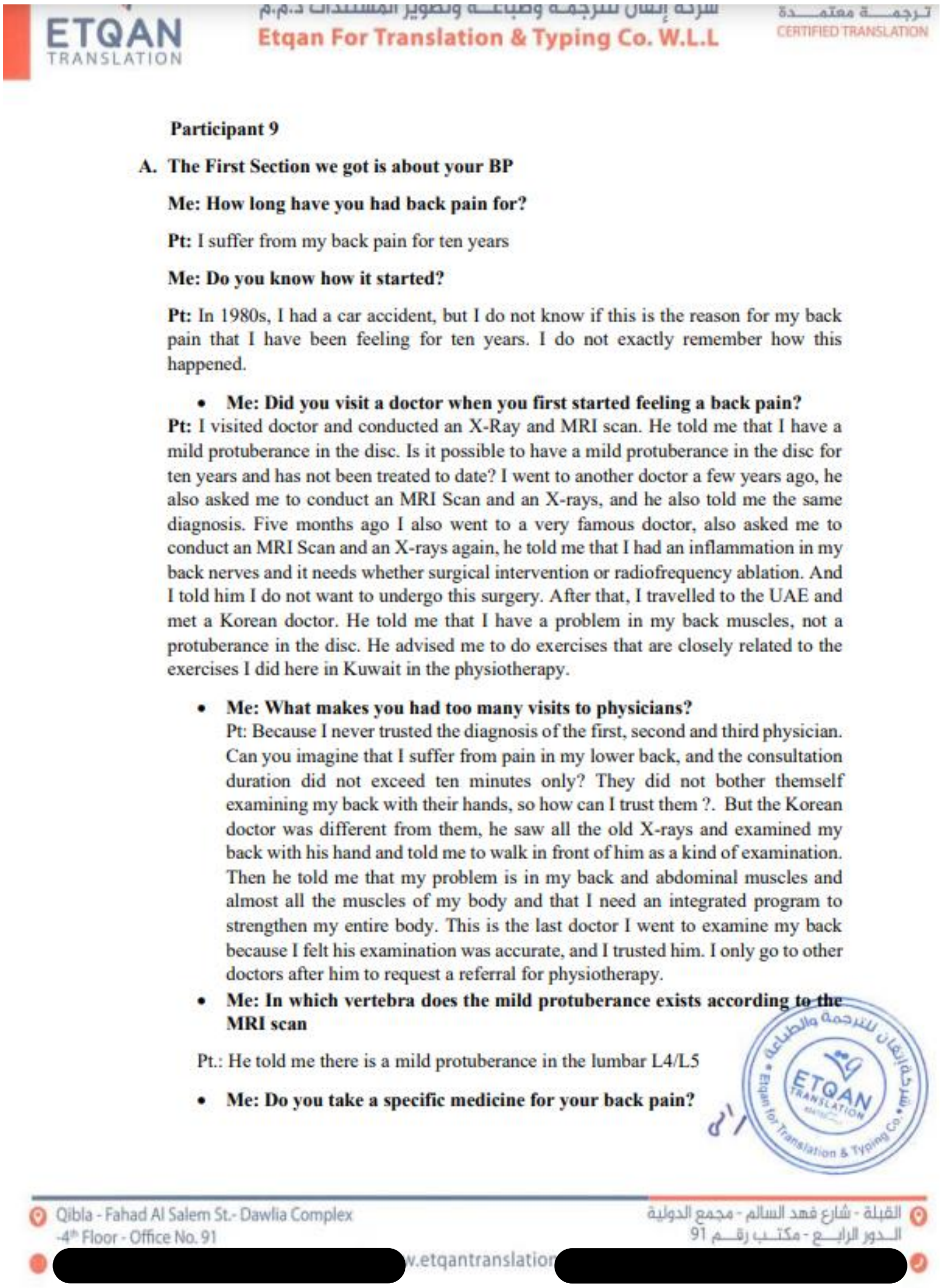
13) What is the best thing you realised it really works with you to manage your BP?

14) What point would you go back to GP or get referral to physiotherapy again?

15) Is there is anything else have not been covered you want to discuss about?

That brings me to the end of the interview, thank you for coming, if you have any question, I would be pleased to answer you.

Appendix 16: Participant(10) interview scripts.



Participant 9

A. **The First Section we got is about your BP**

Me: How long have you had back pain for?

Pt: I suffer from my back pain for ten years

Me: Do you know how it started?

Pt: In 1980s, I had a car accident, but I do not know if this is the reason for my back pain that I have been feeling for ten years. I do not exactly remember how this happened.

- **Me: Did you visit a doctor when you first started feeling a back pain?**

Pt: I visited doctor and conducted an X-Ray and MRI scan. He told me that I have a mild protuberance in the disc. Is it possible to have a mild protuberance in the disc for ten years and has not been treated to date? I went to another doctor a few years ago, he also asked me to conduct an MRI Scan and an X-rays, and he also told me the same diagnosis. Five months ago I also went to a very famous doctor, also asked me to conduct an MRI Scan and an X-rays again, he told me that I had an inflammation in my back nerves and it needs whether surgical intervention or radiofrequency ablation. And I told him I do not want to undergo this surgery. After that, I travelled to the UAE and met a Korean doctor. He told me that I have a problem in my back muscles, not a protuberance in the disc. He advised me to do exercises that are closely related to the exercises I did here in Kuwait in the physiotherapy.

- **Me: What makes you had too many visits to physicians?**
  Pt: Because I never trusted the diagnosis of the first, second and third physician. Can you imagine that I suffer from pain in my lower back, and the consultation duration did not exceed ten minutes only? They did not bother themself examining my back with their hands, so how can I trust them ?. But the Korean doctor was different from them, he saw all the old X-rays and examined my back with his hand and told me to walk in front of him as a kind of examination. Then he told me that my problem is in my back and abdominal muscles and almost all the muscles of my body and that I need an integrated program to strengthen my entire body. This is the last doctor I went to examine my back because I felt his examination was accurate, and I trusted him. I only go to other doctors after him to request a referral for physiotherapy.
- **Me: In which vertebra does the mild protuberance exists according to the MRI scan**

Pt.: He told me there is a mild protuberance in the lumbar L4/L5

- **Me: Do you take a specific medicine for your back pain?**

Pt: I have some stomach problems, one time I used painkillers, and it harshly affected my stomach. It is strong, and I cannot bear it. Now I only use Paracetamol sometimes, not every day.

- **Me: Have you had a previous episode of LBP?**

Pt: Yes, too often for ten years and I've been suffering from lower back pain

Me: How many times have you been referred to PT?

Pt: Quite a lot. I underwent to physiotherapy more than 10 times. I did cupping for my back more than 4 times. Even I went to a somebody who treats with traditional medicine. He told me to lie down on the floor, tied a rope to my leg and suddenly pulled my leg so that there was a second person holding my top. I felt that my whole back was crackled. Then he applied Hijama for me.

- **Me: What makes you had too many physiotherapy sessions and traditional medicines?**

Pt: Because back pain eases after the physiotherapy, but after a while, the pain comes again. Electrotherapy is comfortable, it relieves my pain, but after the session is over, I realized the pain increases again. Every time I told my self that there would be a new physiotherapy technique that could heal my back, or some physio could be aware of my problem and excels in his speciality and understands my problem that he could treat me. Also, ads in social media about new advanced devices for treating the lower back, but whenever I go there, I have not got any benefit so far, I still feel pain.

Me: Are you sustained to do the exercises assigned to you after the course of physiotherapy?

Pt: Yes I am, but without any benefits, although I continued doing the exercises. The pain flares up again after two to three weeks after the last session of the physiotherapy.

Me: Do the physiotherapy sessions that you have taken include electrotherapy as a type of treatment?

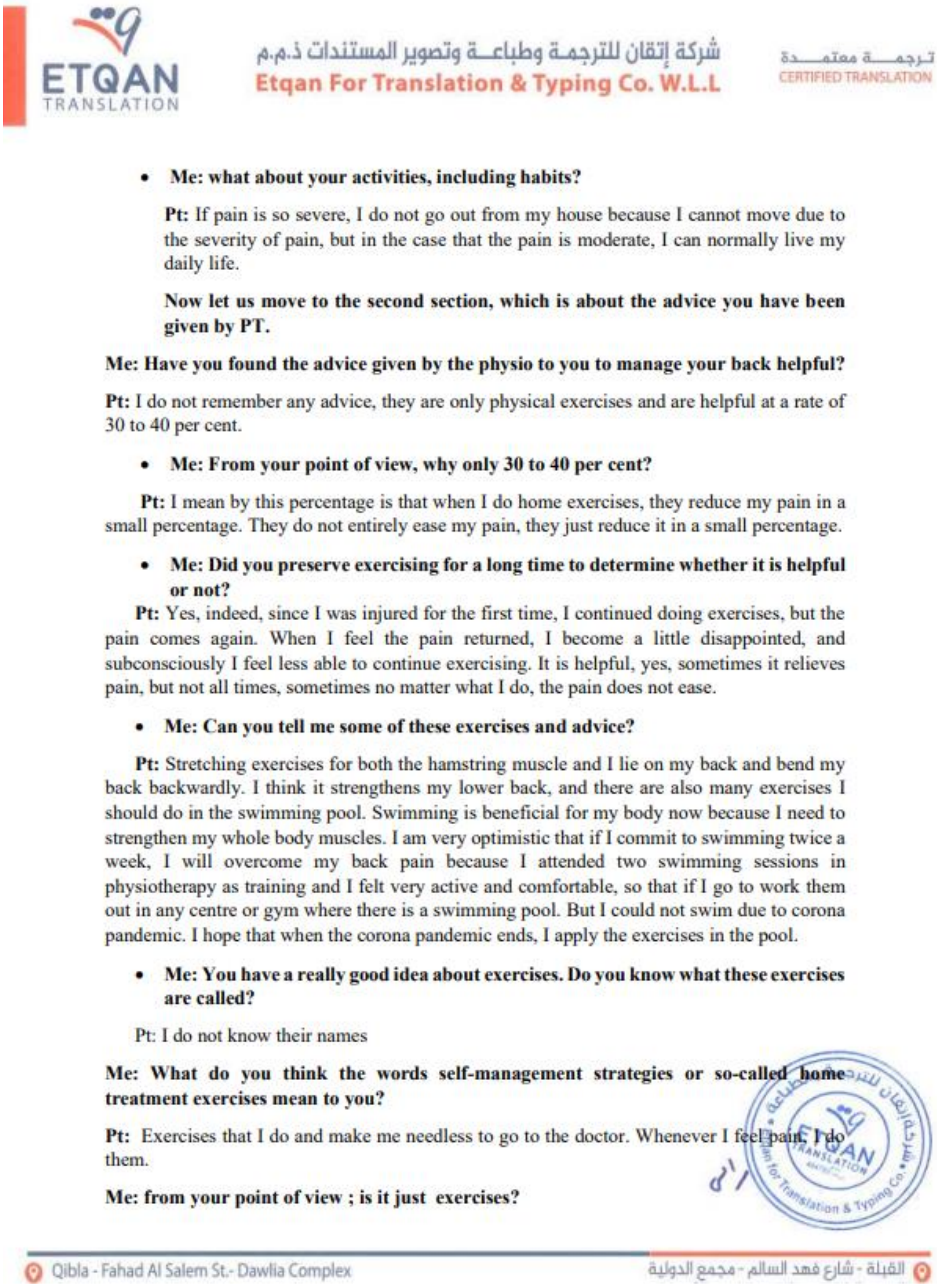
Pt:yes, almost all of the sessions. There was a course that I have attended It was about ten sessions. They only treated me by electrotherapy, hot packs and stretching exercises for legs and back.

Me: Would you please tell me if your LBP affects you either at work or during everyday activities, including habits?

Pt: Yes it does affect me.

- **Me: Can you tell me how LBP affects you at work?**

Pt: I started feeling pain shortly after retirement, after like 4 months of retirement. Now it becomes severe.



- **Me: what about your activities, including habits?**

Pt: If pain is so severe, I do not go out from my house because I cannot move due to the severity of pain, but in the case that the pain is moderate, I can normally live my daily life.

Now let us move to the second section, which is about the advice you have been given by PT.

Me: Have you found the advice given by the physio to you to manage your back helpful?

Pt: I do not remember any advice, they are only physical exercises and are helpful at a rate of 30 to 40 per cent.

- **Me: From your point of view, why only 30 to 40 per cent?**

Pt: I mean by this percentage is that when I do home exercises, they reduce my pain in a small percentage. They do not entirely ease my pain, they just reduce it in a small percentage.

- **Me: Did you preserve exercising for a long time to determine whether it is helpful or not?**

Pt: Yes, indeed, since I was injured for the first time, I continued doing exercises, but the pain comes again. When I feel the pain returned, I become a little disappointed, and subconsciously I feel less able to continue exercising. It is helpful, yes, sometimes it relieves pain, but not all times, sometimes no matter what I do, the pain does not ease.

- **Me: Can you tell me some of these exercises and advice?**

Pt: Stretching exercises for both the hamstring muscle and I lie on my back and bend my back backwardly. I think it strengthens my lower back, and there are also many exercises I should do in the swimming pool. Swimming is beneficial for my body now because I need to strengthen my whole body muscles. I am very optimistic that if I commit to swimming twice a week, I will overcome my back pain because I attended two swimming sessions in physiotherapy as training and I felt very active and comfortable, so that if I go to work them out in any centre or gym where there is a swimming pool. But I could not swim due to corona pandemic. I hope that when the corona pandemic ends, I apply the exercises in the pool.

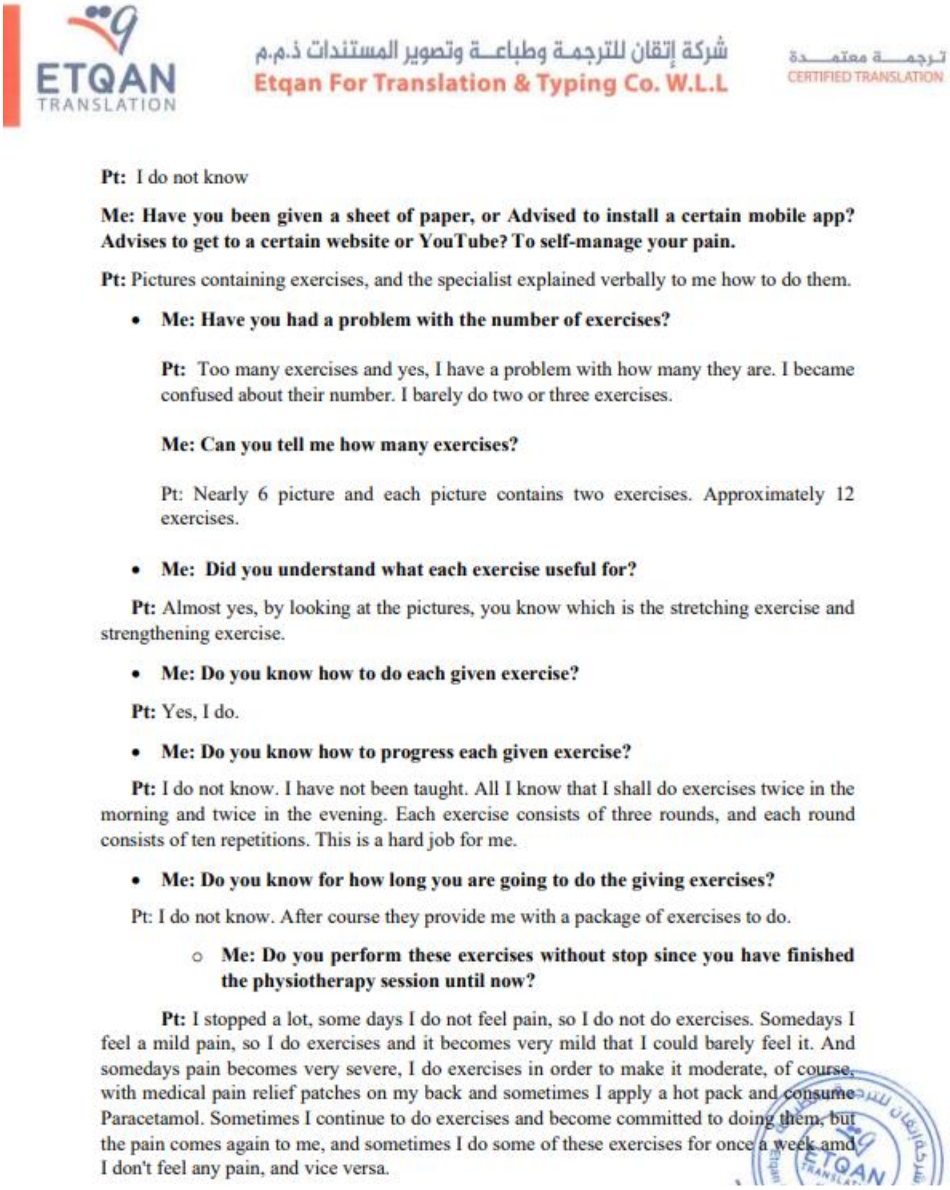
- **Me: You have a really good idea about exercises. Do you know what these exercises are called?**

Pt: I do not know their names

Me: What do you think the words self-management strategies or so-called home treatment exercises mean to you?

Pt: Exercises that I do and make me needless to go to the doctor. Whenever I feel pain, I do them.

Me: from your point of view ; is it just exercises?



ETQAN TRANSLATION

شركة إتقان للترجمة وطباعة وتصوير المستندات ذ.م.م
Etqan For Translation & Typing Co. W.L.L

ترجمة معتمدة
CERTIFIED TRANSLATION

Pt: I do not know

Me: Have you been given a sheet of paper, or Advised to install a certain mobile app? Advises to get to a certain website or YouTube? To self-manage your pain.

Pt: Pictures containing exercises, and the specialist explained verbally to me how to do them.

- **Me: Have you had a problem with the number of exercises?**

Pt: Too many exercises and yes, I have a problem with how many they are. I became confused about their number. I barely do two or three exercises.

Me: Can you tell me how many exercises?

Pt: Nearly 6 picture and each picture contains two exercises. Approximately 12 exercises.

- **Me: Did you understand what each exercise useful for?**

Pt: Almost yes, by looking at the pictures, you know which is the stretching exercise and strengthening exercise.

- **Me: Do you know how to do each given exercise?**

Pt: Yes, I do.

- **Me: Do you know how to progress each given exercise?**

Pt: I do not know. I have not been taught. All I know that I shall do exercises twice in the morning and twice in the evening. Each exercise consists of three rounds, and each round consists of ten repetitions. This is a hard job for me.

- **Me: Do you know for how long you are going to do the giving exercises?**

Pt: I do not know. After course they provide me with a package of exercises to do.

  - **Me: Do you perform these exercises without stop since you have finished the physiotherapy session until now?**

Pt: I stopped a lot, some days I do not feel pain, so I do not do exercises. Somedays I feel a mild pain, so I do exercises and it becomes very mild that I could barely feel it. And somedays pain becomes very severe, I do exercises in order to make it moderate, of course, with medical pain relief patches on my back and sometimes I apply a hot pack and consume Paracetamol. Sometimes I continue to do exercises and become committed to doing them, but the pain comes again to me, and sometimes I do some of these exercises for once a week amd I don't feel any pain, and vice versa.

Me: What the most thing do you prefer? Mobile app? A sheet of paper? Verbally? Website? To follow the instructions and home treatment exercises given by a physio and why?

Pt: I prefer it to be a mobile application. It is easier for me.

- **Me: why?**
  Pt: The exercises become clearer for me than the paper, I can watch the movement through video, pause the video whenever I want to, and watch how he does the exercise. I mean, there is someone moving and you can imitate him better than the paper. The paper is wearing out where you keep it, and it may be lost if you take it to another place. Therefore I do not like it.

Me: Tell me about any things that you do to help/ease the pain.

Pt: Walking. If I walk for a long time, pain relieves but not all time.

B. Now we are in the last section which is about how you manage your back pain and flare up.

Me: Once you have given the self-management strategies (Home treatment exercises), do you find time to exercise?

Pt: Yes, I do.

Me: Could you please tell me when?

Pt: In the morning before breakfast, I do exercises. Once I wake up i feel laziness, exercises energize me and relieve pain. Better than the night because I don't want to be active at night so that I can sleep.

Me: If your back flared up again, with all the advice you have been given, do you think you are confident to be able to manage the pain?

Pt: Depending on pain, sometimes I feel a severe episode of pain, and with doing exercises it eases, sometimes it does not ease, meaning that it decreases, and sometimes the intensity of the pain does not change. But most of the time Inshallah I can.

- **Me: Tell me what you would do, please.**

Pt: If the pain is very intensive, I put the pain-relieving patches and walk around and then do stretches and strengthening exercises for the lower back, which the specialist taught me. I do two or three exercises and choose between many exercises. If the pain is very intensive, it often takes time to ease, meaning that it gradually eases. It may take a day or two, accordingly. Sometimes I take Paracetamol. What can doctor do? He prescribes medicines that hurt my stomach and cortisone injections or something like that.

Me: What are the key things that motivated you to continue with all the given exercises?

Pt: Pain makes me do exercises. Without pain, I am also active and do various exercises for my entire body to strengthen my body muscles, but with feeling pain, I do exercises prescribed for my back pain in order to relieve the pain. My wife always motivates me and reminds me to do exercises. Currently, I am motivated to attend a course of hydrotherapy for my back and all of my body and I am optimistic about the results.

- **Me: Me: does the pain affect your mood, stress?**
  Pt: Yes, it affects my psyche and mood. If the pain is intensive, this pain I told you about which never eases no matter what exercises, medical patches and walking I have done, or it may only become mild, I admit it affects me, it prevents me from doing anything. No matter what exercises I have done, the pain is not eased. So instead of stressing myself in doing exercises, I sit without doing anything because this is my body and I know it well. Severe pain makes me lazy, but this thing is not within reach and out of my hands, severe pain bothering me constantly so that it affects my mood. But if the pain is mild or moderate, it does not affect my psyche.
- **Me: Can you give me an example?**

  Pt: Meaning that it prevents me from doing anything, I give up for pain. I use medical patches that relieve pain and ointments. I lie down on the bed or stay at home. My mood gets worse, and I lose my temper .

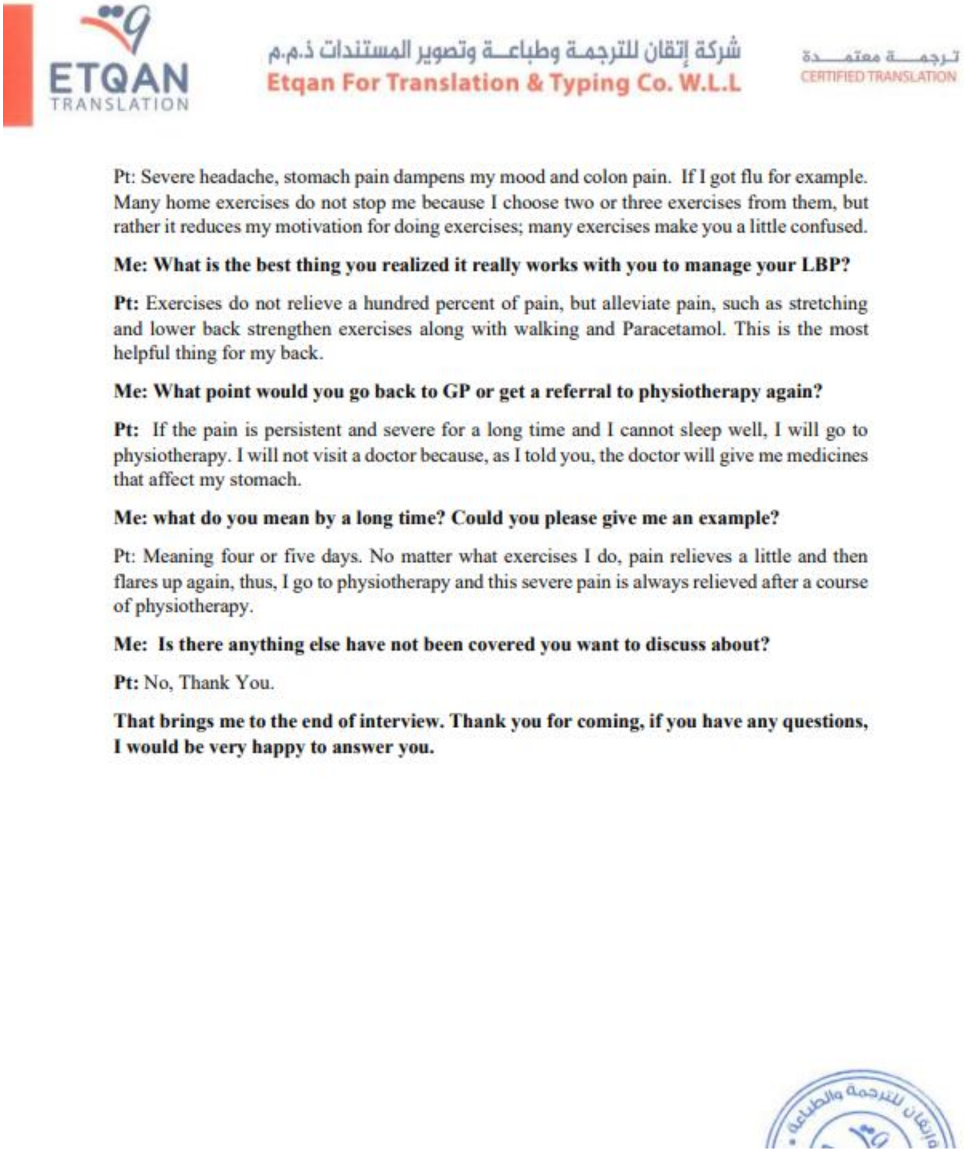
- **Me: Is the presence of family around somehow making you cope with pain?**
  Pt: Yes, significantly. My wife frequently advises and motivates me to do my home exercises when I feel my back pain. Sometimes she reminds me saying I did not see you exercising or she asks "Did you do your exercises today? .

  ME: How could this help you?

  Pt: She is worried about me. This stabilizes my mood and motivates me to do exercises.

  - **Me: Does going out on picnics or shopping with your family affect your pain? For example, does pain increase or reduce?**
    Pt: I noticed that when I go shopping, I feel so much pain because this is my physicality, if I walked and stood then walked and stood, my pain flares up. I do not mind walking for a long distance without stopping. But frequent walking and stopping worsen my back pain, so I prefer going out with my family to walk or to go to a restaurant where I can sit, as for shopping, I do not go. Eventually, it doesn't make any difference with me , If I got severe pain, I will not be able to hang out, and if the pain is mild or moderate, I can ignore it to enjoy my outing time.

Me: What are things that make you unable to do your exercises or hindered you?



Pt: Severe headache, stomach pain dampens my mood and colon pain. If I got flu for example. Many home exercises do not stop me because I choose two or three exercises from them, but rather it reduces my motivation for doing exercises; many exercises make you a little confused.

Me: What is the best thing you realized it really works with you to manage your LBP?

Pt: Exercises do not relieve a hundred percent of pain, but alleviate pain, such as stretching and lower back strengthen exercises along with walking and Paracetamol. This is the most helpful thing for my back.

Me: What point would you go back to GP or get a referral to physiotherapy again?

Pt: If the pain is persistent and severe for a long time and I cannot sleep well, I will go to physiotherapy. I will not visit a doctor because, as I told you, the doctor will give me medicines that affect my stomach.

Me: what do you mean by a long time? Could you please give me an example?

Pt: Meaning four or five days. No matter what exercises I do, pain relieves a little and then flares up again, thus, I go to physiotherapy and this severe pain is always relieved after a course of physiotherapy.

Me: Is there anything else have not been covered you want to discuss about?

Pt: No, Thank You.

That brings me to the end of interview. Thank you for coming, if you have any questions, I would be very happy to answer you.

Appendix 17: Physiotherapists' interview schedule

1) What do you understand by the term self-management strategies?

2) What do you think are the factors that could increase patient's compliance with self- management instructions?

3) What do you think are the factors that could reduce patient's compliance with self- management instructions?

This next section is about factors that you may consider when deciding what self-management strategies you develop.

4) Do you consider patient preferences in developing the content of a self -management advice ?

Yes: Can you tell me what aspect or how patient preferences in developing the content of a self -management advice?

No: Can you tell me why not

You read earlier about coping strategies

5) Do you take account of an active or passive coping style when you assess a patient?
   For example Do you modify the assessment in any way for somebody who appears to be mainly adopted passive strategies ?

   (MM ie looking at patients` ability to perform exercises despite the pain)

6) By understanding differences in active and passive coping style, are there any differences between self-management strategies given to patients during the course of treatment
   a. Yes (tell me what sort of differences between Self-management please)
   b. No (Just in broad way what SMS you would give patients anyway)

I want to get some details about what self-management programme you would give to patients if they had another flare up of LBP

7) Can you tell me what information or self- help treatment you would give to a patient about how to deal with a flare up during the course of SMS?

*Can you tell me why you chose these/that one

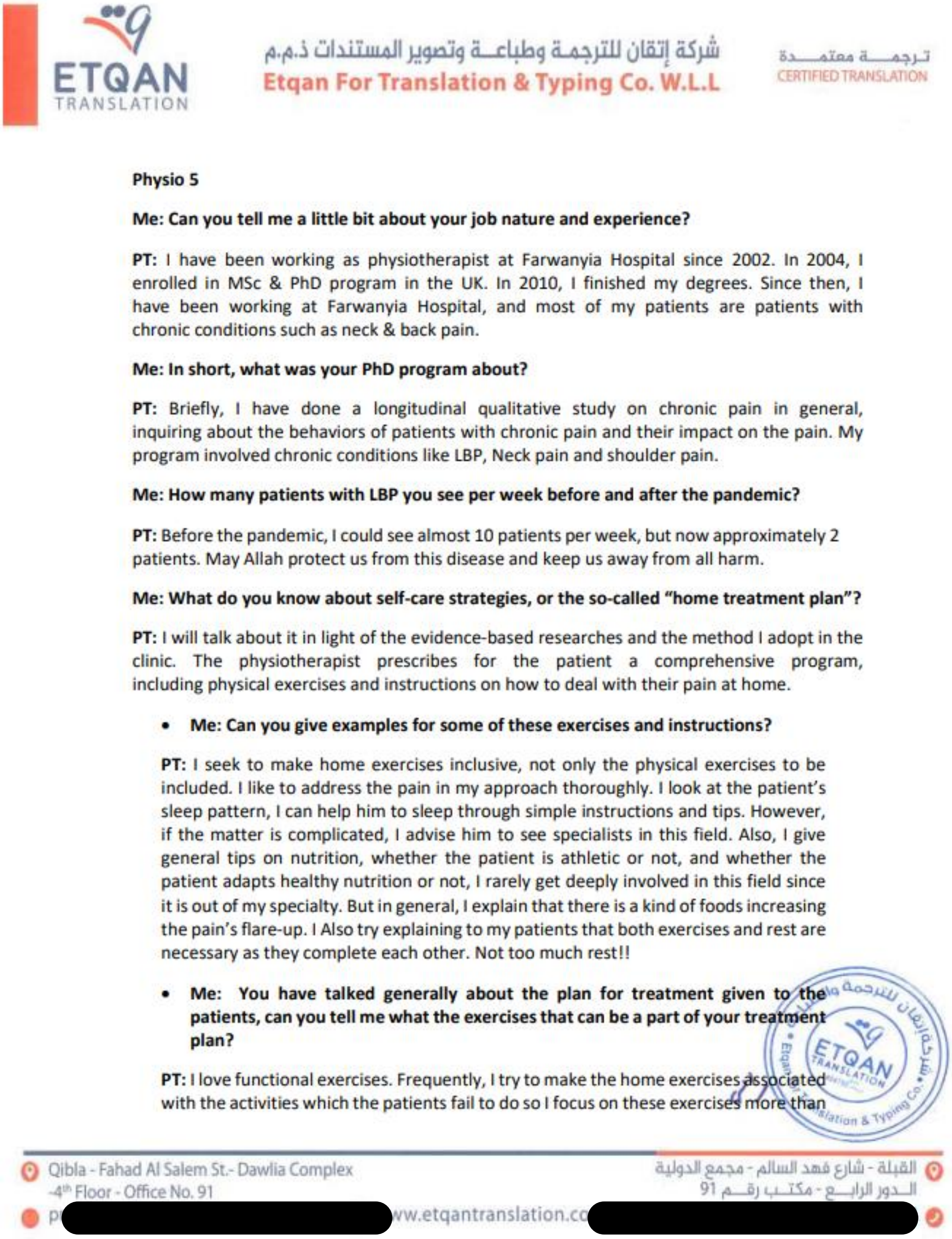
*If there are differences and why ?

We are coming to the last couple of questions ,the first one is about the format of delivery of SM programme

8) What approach do you use to deliver self-management strategies for them (paper, Apps, online or verbal?)
   Why do you choose this approach over others?

9) What would be your preferred method of delivery And why?

Appendix 18: Physiotherapist interview scripts



ETQAN TRANSLATION

شركة إتقان للترجمة وطباعة وتصوير المستندات ذ.م.م
Etqan For Translation & Typing Co. W.L.L

ترجمة معتمدة
CERTIFIED TRANSLATION

Physio 5

Me: Can you tell me a little bit about your job nature and experience?

PT: I have been working as physiotherapist at Farwanyia Hospital since 2002. In 2004, I enrolled in MSc & PhD program in the UK. In 2010, I finished my degrees. Since then, I have been working at Farwanyia Hospital, and most of my patients are patients with chronic conditions such as neck & back pain.

Me: In short, what was your PhD program about?

PT: Briefly, I have done a longitudinal qualitative study on chronic pain in general, inquiring about the behaviors of patients with chronic pain and their impact on the pain. My program involved chronic conditions like LBP, Neck pain and shoulder pain.

Me: How many patients with LBP you see per week before and after the pandemic?

PT: Before the pandemic, I could see almost 10 patients per week, but now approximately 2 patients. May Allah protect us from this disease and keep us away from all harm.

Me: What do you know about self-care strategies, or the so-called "home treatment plan"?

PT: I will talk about it in light of the evidence-based researches and the method I adopt in the clinic. The physiotherapist prescribes for the patient a comprehensive program, including physical exercises and instructions on how to deal with their pain at home.

- **Me: Can you give examples for some of these exercises and instructions?**

  PT: I seek to make home exercises inclusive, not only the physical exercises to be included. I like to address the pain in my approach thoroughly. I look at the patient's sleep pattern, I can help him to sleep through simple instructions and tips. However, if the matter is complicated, I advise him to see specialists in this field. Also, I give general tips on nutrition, whether the patient is athletic or not, and whether the patient adapts healthy nutrition or not, I rarely get deeply involved in this field since it is out of my specialty. But in general, I explain that there is a kind of foods increasing the pain's flare-up. I Also try explaining to my patients that both exercises and rest are necessary as they complete each other. Not too much rest!!

- **Me: You have talked generally about the plan for treatment given to the patients, can you tell me what the exercises that can be a part of your treatment plan?**

  PT: I love functional exercises. Frequently, I try to make the home exercises associated with the activities which the patients fail to do so I focus on these exercises more than

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القبلة - شارع فهد السالم - مجمع الدولية
الدور الرابع - مكتب رقم 91

p [redacted] ww.etqantranslation.co [redacted] the exercises for strength. For example, suppose the patient can't perform the prayer's movements of standing, Ruku (kneeling), Sujud (prostration), sitting and Qiyaam (standing), here, I focus on the functional and dynamic exercises such as sit-to-stand exercise, squat and push-up, so that the patient can perform the prayer as these exercises usually cover all movements required in the prayer.

Mostly in Kuwait, the patients with chronic back pain have a weakness in the pelvic floor, gluteus, and core muscles, causing severe stress on the back muscles. Hence, I highlight and focus on the function exercises such as squat for the core and gluteus, whether it is assisted squat, squat to chair or squat with weights, as needed. I also use the farmer walk exercise. It is a functional exercise we use in our daily routine. I consider these exercises a must, if the patient is not able to carry her handbag, baby or the groceries bag. I also try to use the exercises, in which the core is employed and activated as it mainly acts as a girdle supporting the spine. So, I believe that core activation during movement is the best thing. One time, a patient complained to me that she can't take the cooking pot off the floor to put it in the upper shelf. So here, her problem is in the combined movement. Thus, I ask her to do the squat and press exercises. After a while, she has no longer any problem in the movement. Her movement has been solved.

- **Me: Can you give me a simple example on how to activate the core muscles during the patient's movement?**

PT: The core muscles can be activated through swimming while educating the patient the technique ``breath in and out`` normally while squeezing your abdominal muscle, or other functional exercises like blank, side blank and reverse blank, in which all body muscles are employed in these positions.

- **Me: I noticed you said that some foods could cause the pain's flare-up, can you mention some of them?**

PT: In general, they are called pro-inflammatory foods such as foods that contain too much sugar and bad carbohydrates like fast food. Also, alcohol can increase inflammation.

Me: I have never heard you talk about and have used the electrotherapy?

PT: Yes, I have never used the electrotherapy since I have finished my PhD because, as I said earlier, I do my best to rely on researches based on evidence in my treatment. Having reviewed the researches, I found that the scientific evidence on the effectiveness of electrotherapy is weak and its effect is mostly placebo. The researches proved that the exercises are the best way to deal with the chronic back pain.

Me: Do you think that the patient is fully aware of his problem?

PT: Honestly, No. Most of the patients with chronic low back pain (LBP) who come to the clinic think that they are suffering from spondylosis or bulging/herniated disc. Patients with a herniated disc are the most seen in the clinic. I usually re-educate them about their problem after the check-up. In Kuwait, the discogenic becomes like a scapegoat to be blamed for every spinal pain. I prefer to raise the patient's awareness on his problem, explaining, for example, that your bulging disc does not go with your symptoms. So here, I make sure to educate the patient that his main problem is not due to the disc. I think that the patient's lack of awareness and knowledge of his problem, as well as the wrong diagnosis, can serve as a factor supporting the complication of patient's pain and making it chronic since he will finally deal with the pain wrongly.

- **Me: How?**

  PT: If the patient has no idea how to deal with his pain, he will do the exercises wrongly and uselessly. Also, the wrong diagnosis results in the wrong prescription of drugs not targeting the main problem. Thus, there will be no improvement and his condition will become chronic. In Kuwait, most physicians and physiotherapists rely on MRI tests and scans to establish the diagnosis. However, the researches revealed that more than 85 % of the back pain is nonspecific. Hence, when the physician tells the patient that he has spondylosis or herniated disc based only the scans, it is possible that the fear will be implanted in the patient, leading him to adapt more protective mechanism and more maladaptive behaviors which aggravate the problem.

Me: How do you often educate the patient about his condition? Do you explain to him verbally or use brochures to read it at home? And Why?

PT: I prefer to have, at first, a look at the full history of the patient, and then to make the assessment. Based on those mentioned, I educate the patient about his condition verbally. I don't use brochures as each patient with chronic pain is different from the other, and the information contained in the brochures may be more generic. I deal with each patient as an individual different from the other. Each person needs a special method to be educated, special way to talk to him and tips different from the other.

- **Me: I noticed you talked about maladaptive behavior, can you tell me a little bit about it?**

PT: In short, sometimes when the patients are diagnosed with lumbar spondylosis, they fear that doing a lot of movement and exercise can increase the friction between vertebral bones. So, we see them neither moving nor doing resistance exercise. Even after they have recovered, they rarely move and use a stick to reduce the pressure on their back in so far as not to increase the problem. Also, you see them not bending their back while picking up anything from the floor. As a result, they would suffer from back stiffness and muscles weakness. Hence, these maladaptive behaviors can be harmful to patients with chronic LBP.

Me: In your opinion, what are the factors that could increase patients' level of commitment to home exercises when they are prescribed to them by you?

PT: The patient should understand the program to be followed by him at home. The program should be in accordance with his lifestyle and the degree of his disability, instead of using generic exercises distracting the patient. For example, if the patient has a problem in getting up from the chair, it is possible to prescribe for him bridging exercises, which is considered the right exercise for me to employ the hip muscles. However, it makes no senses for the patient since he fails to link the exercise with his problem. However, when you prescribe for the patient the squat to chair, he can link the exercise with his problem of inability to get up from the chair. Thus, he becomes more determined, especially if the result is productive.

Also, the patient should know from where the pain comes, have confidence in doing home exercises, and have the ability to control the pain. The more the patient has the ability to deal with the pain by using exercises, the less he becomes sensitive to the pain. Also, let's not forget to educate the patient about his condition and the importance of each exercise done at home since the patient's education should make a change in his behavior and lifestyle. I am convinced that the physiotherapist should also encourage and promote the patient to do home exercises, to follow the active approach, and to keep himself away from the passive approach.

- **Me: Is the patient's ability to deal with the pain considered a method the patient learns by himself or a skill that physiotherapist must deliver it to each patient?**

PT: both, in case of dealing with the pain. There are patients who can deal with the pain by themselves. For example, if the patient suffers from back pain, he knows by himself that he should lay on his back for a while. And then, he should do the exercises given by the physiotherapist, put the hot pack or do anything he knows it will ease and alleviate the pain. On the contrary, you see the patients who cannot deal with their pain, either use the drugs or visit the physician. In such case, it is my duty to make sure that does not happen. I have to provide my patients with my e-mail or

WhatsApp to contact me only when they fail to deal with the pain at home. By the time, they will learn how to deal with the pain without drugs.

Me: In your opinion, what are the factors that could reduce their commitment to these exercises?

PT: I think if the exercises are generic and unspecified, if the patient fears that the movement will harm him or increase the pain, and if the patient lacks self-confidence in performing the exercise alone. Here, one of my objectives as physiotherapist is to increase the patient's confidence. Also, I believe that doing a lot of exercises is the reason. For example, some physiotherapists prescribe home exercises for each muscle separately such as hamstring, quadriceps, cave, and pelvic floor muscle as a kind of home exercises supporting the back. However, it is possible to prescribe one exercise in which all muscles are engaged, and this exercise is squat. Doing a lot of exercises may take a lot of patient's time. Thus, the patient may be committed to do the exercises for a while, and then get bored. Of course, if the patient is diagnosed with anxiety or depression, his commitment to do home exercises will be adversely affected. Also, work pressure or social pressures that affect the patient's commitment adversely.

- **Me: How do you increase the patient's confidence in performing home exercises?**

  PT: I seek to increase the number and intensity of exercises gradually. I begin with easy exercises to raise the patient's confidence. I explain to the patient to expect that there will be a little pain during the exercises. By the time, the pain will be eased. So, do not let this thing frighten or prevent you from doing exercises.

- **Me: How do you deal with the patients who are diagnosed with depression & anxiety? Do you recommend them to see psychologist to firstly improve their condition before doing home exercises?**

  PT: If the pain makes the patient so worried and the patient overthinks of his pain, and it becomes clear to me that such thinking and anxiety slow the process of patient's recovery, I educate and reassure the patient that his pain will be eased. However, if it is found that the patient complains of general depression or anxiety, for example, he gets worried about everything, here I realize that this problem is out of my specialty. Thus, I advise the patient to see the psychologist, saying to him "We are all together for your service".

Me: Do you use a specific tool or questionnaire to measure any psychological issues may present with patients?

PT: I am very interested in the questionnaire related to the psychological issues such as Fear Avoidance Belief, the Hospital Anxiety and Depression, etc., I read and ask verbally the patients some of the questions listed in the questionnaire. I know this is not the right way, but unfortunately, no reliable Arabic versions are available. I ask the patient specific questions to assess his condition. Honestly, I don't use the questionnaire, it is just about asking the patients questions from the questionnaires, as I said earlier.

- **Me: Do you think that this method is correct and effective?**

  PT: It is a wrong approach, but in somehow its useful, at least I have an idea about the patient's psychological condition.

Me: The Second part of interview is about the factors that you make take into consideration when deciding to develop a home treatment plan for the patient.

Me: Do you take into account the patient's preference in terms of treatment or exercises when building a home treatment plan for them?

PT: Yes

Me: Can you tell me what aspect or how patient preferences in developing the content of a self-management advice?

PT: In some cases, when I develop a home treatment plan for the patients, some patients refuse, out of fear, to do certain exercises. Here, my duty is to explain to them the importance of such exercises and to try to make them fearless by doing the exercises in front of me and explaining that such exercise will not harm you as the fear from the exercise will eventually lead to a delay in the treatment. However, if the exercise is very painful and the patient doesn't want to do it , for example, if the patient fails to do chest press exercise in a close kinematic chain, which is one of the home exercises prescribed for the patient, due to severe pain in her shoulder, I can change the exercise to open kinematic chain such as chest press with free weights. If the patient prefers to do it, so why not? But if not, I can advise her to do the chest exercise using chest press machine.

Me: What would you do if the patient told you that he prefers certain exercises or the use of electrotherapy devices to treat his condition?

PT: I have no problem if the patient prefers certain exercises. This indicates that the patient has already done the exercise before and felt much better. I know that the electrotherapy has no treatment effect, but placebo effect. But I have no problem if the patient prefers to use electrotherapy at home, as long she undertakes the home treatment plan prescribed for her, and she makes sure that her treatment is not turned to a passive approach. I have no mind if the patient said that she would like to use TENS portable machine as an example, as long as she moves and does home exercises. However, it is banned to request the patient to use the electrotherapy here in the clinic. It is only allowed at home.

Me: You have already read pain-coping responses paper.

Me: Do you take account of an active or passive coping style when you assess a patient at the beginning of the first session? For example, do you modify the assessment in any way for somebody who appears to be a non-coper? I am interested in the patient's confidence in performing therapeutic exercises.

PT: no, the same assessment for all.

Me: Will there be a difference to home plan presented through you to the patients when knowing the difference between active and passive coping responses for the patient?

PT: Yes, first of all, I have to be aware of the passive strategies adopted by the non- coper in order to amend the home treatment plan. For example, as I read from the paper you have presented to me that the passive coper relies too much on the medicine. By reading, I found that some studies proved that the long-term use of drugs can lead to problems in the kidneys and abdominal and some drugs may increase the pain sensitivity. So here, I can educate the patient on the future risk of using drugs and advise her to go to her physician in order to develop a plan for her to get rid of the drugs gradually. The exercises are proven to be better than the drugs for the treatment of chronic back pain with no future problems.

Secondly, I use the graded loading and graded exposure with the non-coper, while I present to the active coper the exercises directly. The passive coper maybe have a fear from the exercise and severe pain during the movement. Thus, we load the joints gradually, make a graded exposure, and educate the patient. As I said, the exercises are automatically given and presented to the active coper they do not need graded exposure and graded loading.

Me: I want to get some details about self-management program you would give to patients if they have another flare up of LBP?

Me: Can you tell me what information or self- treatment you would give to a patient how to deal with a flare-up during the course of SMS?

PT: One of the most important thing I am keen on during the last physiotherapy session is to explain to the patient that your pain may be increased in any of the coming days, because the pain in your case may be caused by the central nerve system becomes sensitive to the pain, not due to a problem in the back that you have to worry about. It is normal to feel pain while doing a movement as the central nervous system sends a lot of signs to the brain and this is normal pain. Also, it is possible that the patient feels no pain. Further, before the end of the session, I reveal that the social family problems such as divorce, and work pressure and emotional problems like the longing, and lack of sleep can increase the pain. I probably explore why flare-up comes to my patients by asking them whether have a family issue or work problem, or even if they complain of bad sleeping habit. At the same time, I try to reassure the patient that the flare-up is a normal cause for people with CLBP.

Thirdly, I always inform the patients with pain's flare-up that it is not normal to live a life without pain. it is a blessing from Allah by which we realize that we have a problem through the pain. So, it is normal to feel pain since this is the nature of chronic back pain. If the patient feels that the pain gets flared up through a little movement such as kneeling or carrying anything, he should know that it is normal and should be advised not to pay any attention to it. However, if the pain is severe due to a car accident or falling from heights, it is possible to be something new & dangerous. Also, one of the matters that should be taken into account is whether the pain is caused by muscle pain because it has been long time since the patient did exercises or the same pain the patient complains about has increased? So here, It is very important to differentiate between these two matters.

- **Me: Can you tell me why did you chose this?**

PT: The patients have the right to know what is happening to them. All physiotherapists must educate their patients well about the nature of chronic pain, so that the patients will be reassured and not frightened if they suffer again from the pain. We got our degrees not only to draw up a treatment plan for the patients, but also to deliver what we learned to them through educating them about their condition, what is exactly going on with them and how to deal with it.

- **Me: Is there a difference between a home exercise treatment plan and the treatment when they had another flare-up of LBP? In another way are you going to modify the home treatment exercises when they had a flare-up?**

PT: No, there is no difference as long as the patients with chronic pain significantly need to be educated, cared for, reassured and given clear and understandable exercises suitable to their problem. We present all of these when we draw up a home treatment and when the patient suffers from a flare-up. Based on my experience, the pain is supposed to be eased when a full assessment is made to the patient and when there is a suitable treatment plan fits the patients` condition. If the pain is significantly flared-up, there must be something wrong the patient does like performing a lot of exercises or returning to a heavy sport before the completion of rehabilitation treatment course prescribed for him to do at home. In such case, I advise the patient to abide to the home treatment plan which has been developed to ease his pain. When the patient has flare-up, he should follow the plan prescribed for him. Eventually I would say there will be no change in the home exercises when he has a flare-up.

- **Me: Is there a difference in the plan designed for people who are coping actively/passively when they had another flare-up?**

PT: As for me, I keep away from dividing the patients with LBP to groups, since based on my experience and knowledge, such division leads us to follow a specified approach of treatment. This is something that I don't prefer at all, since the patient may be active coper, but the life pressures that we have already covered previously can lead the patient to cope with the pain passively. I never try to deal with the patient as active or passive coper, rather I deal with the patient as an individual. I only seek to figure out what are the factors that increase the pain and try to develop a treatment plan.

Me: We are coming to the last couple of questions, the first one is about the format of delivery of SM program.

Me: What approach do you use to deliver self-management strategies for them (paper, Apps, online or verbal?)

PT: I use several approaches, for example if I have doubt that the patient complains of any dangerous inflammation or any diseases rather than the one for which he is referred for, and if I don't know how to deal with him since it out of my specialty, so here I recommend the patient verbally to see an orthopedist. Sometimes, I ask the patient to write down on the outer sheet the tips, instructions, and exercise to be done at home. Now, I use physio-truck program for the home exercises. It is a program including several videos for the home exercises and many tips from which I can choose and send them to the patient. It is also possible to upload my videos on it.

Me: What would be your preferred method of delivery, and why?

PT: I prefer to do the exercise together here in the clinic to ensure that the patient is doing the exercises correctly and to encourage and reassure her that she will be better so soon. And then, I send video for the exercise we have done together since I found that most of the patients forget the exercises to be done at home after the completion of the physical treatment course.

Appendix 19: Ethical approval (Cardiff University)

CARDIFF UNIVERSITY
PRIFYSGOL CAERDYDD
School of Healthcare Sciences
Ysgol y Gwyddorau Gofal Iechyd

Interim Head of School and Dean /Pennaeth yr Ysgol Dros Dro a Deon Professor David Whitaker

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13 MAY 2020

MOHAMMAD MANDANI
CARDIFF UNIVERSITY
SCHOOL OF HEALTHCARE SCIENCES

Dear Mohammad

Research project title: Coping responses and self-management strategies for patients with chronic low back pain following physiotherapy treatment in Kuwait.

SREC reference: [redacted]

The School of Healthcare Ethics Committee reviewed the above application at the meeting held on 12 May 2020.

Ethical Opinion
The Committee gave a favourable ethical opinion of the above application on the basis described in the application form, protocol and supporting documentation, **subject to the conditions** specified below.

Conditions of the favourable opinion
The favourable opinion is subject to the following conditions being met prior to the start of the research project.

It was stated that you were going to order patients to take part which is inappropriate. The other choice of drawing patients from a waiting list is inappropriate and it was agreed that it would need to be a third party who did this if this was the way to go.

A risk assessment must be done in light of the COVID-19 pandemic and his hospital needs to approve the study going ahead.

Can you confirm that this project is able to carry on at the moment?

Please see attached lead review form with further comments.

The Queen's Anniversary Prizes
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Athena SWAN Silver Award
QAA UK Quality Assured Sicrwydd Ansawdd y DU

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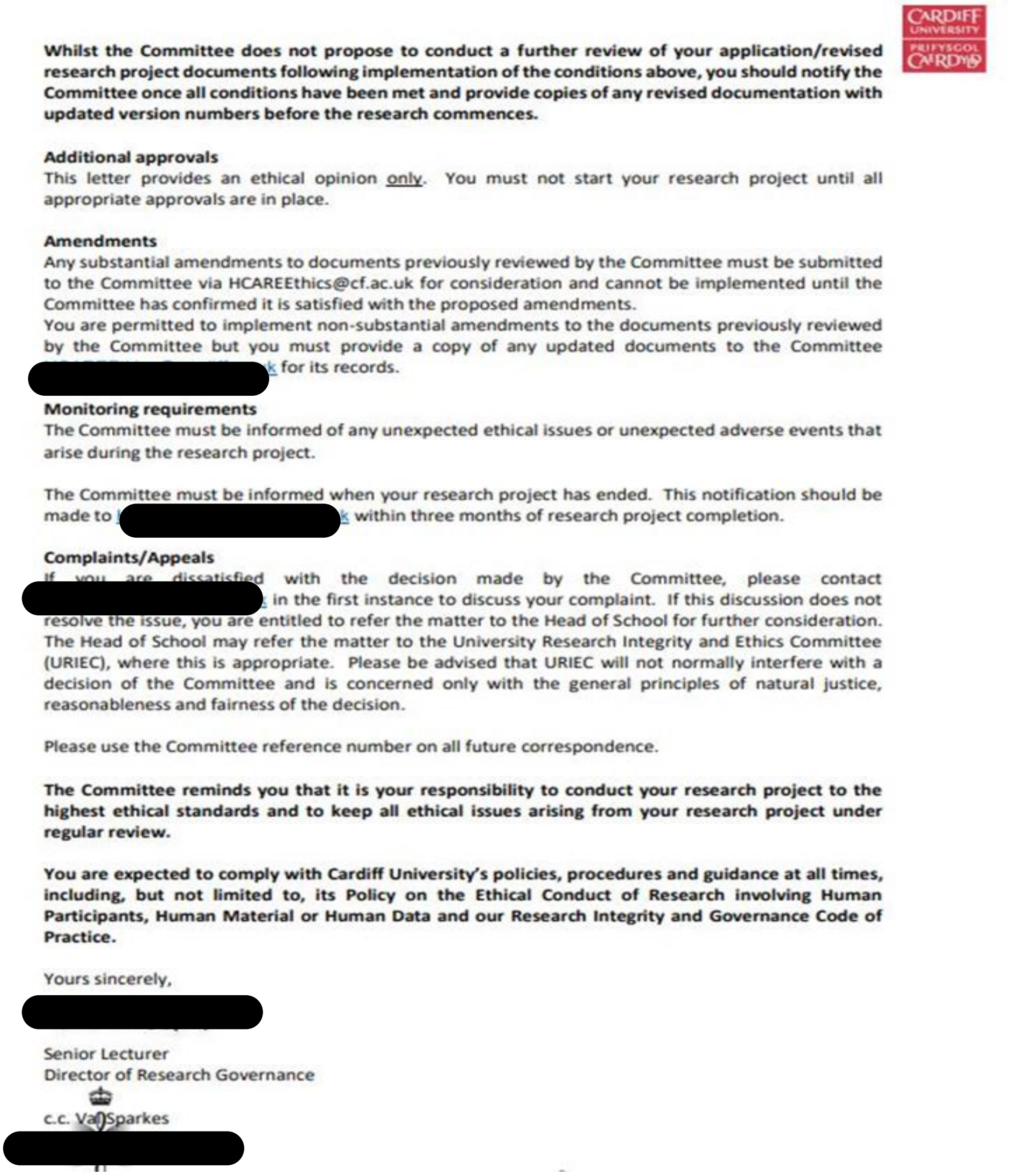


Whilst the Committee does not propose to conduct a further review of your application/revised research project documents following implementation of the conditions above, you should notify the Committee once all conditions have been met and provide copies of any revised documentation with updated version numbers before the research commences.

Additional approvals

This letter provides an ethical opinion only. You must not start your research project until all appropriate approvals are in place.

Amendments

Any substantial amendments to documents previously reviewed by the Committee must be submitted to the Committee via HCAREEthics@cf.ac.uk for consideration and cannot be implemented until the Committee has confirmed it is satisfied with the proposed amendments.

You are permitted to implement non-substantial amendments to the documents previously reviewed by the Committee but you must provide a copy of any updated documents to the Committee [redacted] for its records.

Monitoring requirements

The Committee must be informed of any unexpected ethical issues or unexpected adverse events that arise during the research project.

The Committee must be informed when your research project has ended. This notification should be made to [redacted] within three months of research project completion.

Complaints/Appeals

If you are dissatisfied with the decision made by the Committee, please contact [redacted] in the first instance to discuss your complaint. If this discussion does not resolve the issue, you are entitled to refer the matter to the Head of School for further consideration. The Head of School may refer the matter to the University Research Integrity and Ethics Committee (URIEC), where this is appropriate. Please be advised that URIEC will not normally interfere with a decision of the Committee and is concerned only with the general principles of natural justice, reasonableness and fairness of the decision.

Please use the Committee reference number on all future correspondence.

The Committee reminds you that it is your responsibility to conduct your research project to the highest ethical standards and to keep all ethical issues arising from your research project under regular review.

You are expected to comply with Cardiff University's policies, procedures and guidance at all times, including, but not limited to, its Policy on the Ethical Conduct of Research involving Human Participants, Human Material or Human Data and our Research Integrity and Governance Code of Practice.

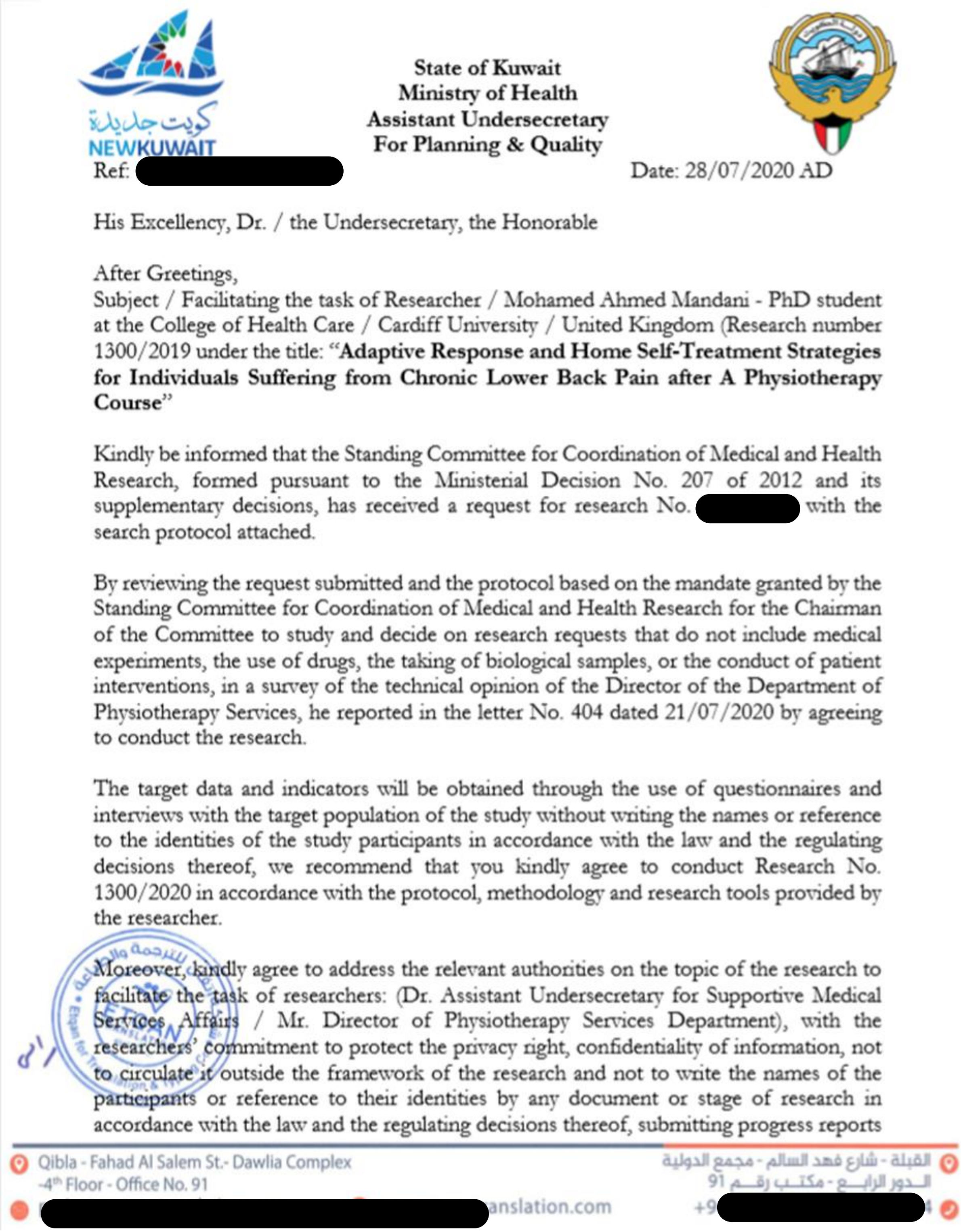
Yours sincerely,

[redacted]

Senior Lecturer
Director of Research Governance

c.c. Val Sparkes
[redacted]

Appendix 20: Ethical approval (Ministry of Health of the State of Kuwait)



كويت جديدة
NEWKUWAIT

State of Kuwait
Ministry of Health
Assistant Undersecretary
For Planning & Quality

Ref: [redacted]

Date: 28/07/2020 AD

His Excellency, Dr. / the Undersecretary, the Honorable

After Greetings,
Subject / Facilitating the task of Researcher / Mohamed Ahmed Mandani - PhD student at the College of Health Care / Cardiff University / United Kingdom (Research number 1300/2019 under the title: "**Adaptive Response and Home Self-Treatment Strategies for Individuals Suffering from Chronic Lower Back Pain after A Physiotherapy Course**"

Kindly be informed that the Standing Committee for Coordination of Medical and Health Research, formed pursuant to the Ministerial Decision No. 207 of 2012 and its supplementary decisions, has received a request for research No. [redacted] with the search protocol attached.

By reviewing the request submitted and the protocol based on the mandate granted by the Standing Committee for Coordination of Medical and Health Research for the Chairman of the Committee to study and decide on research requests that do not include medical experiments, the use of drugs, the taking of biological samples, or the conduct of patient interventions, in a survey of the technical opinion of the Director of the Department of Physiotherapy Services, he reported in the letter No. 404 dated 21/07/2020 by agreeing to conduct the research.

The target data and indicators will be obtained through the use of questionnaires and interviews with the target population of the study without writing the names or reference to the identities of the study participants in accordance with the law and the regulating decisions thereof, we recommend that you kindly agree to conduct Research No. 1300/2020 in accordance with the protocol, methodology and research tools provided by the researcher.

Moreover, kindly agree to address the relevant authorities on the topic of the research to facilitate the task of researchers: (Dr. Assistant Undersecretary for Supportive Medical Services Affairs / Mr. Director of Physiotherapy Services Department), with the researchers' commitment to protect the privacy right, confidentiality of information, not to circulate it outside the framework of the research and not to write the names of the participants or reference to their identities by any document or stage of research in accordance with the law and the regulating decisions thereof, submitting progress reports

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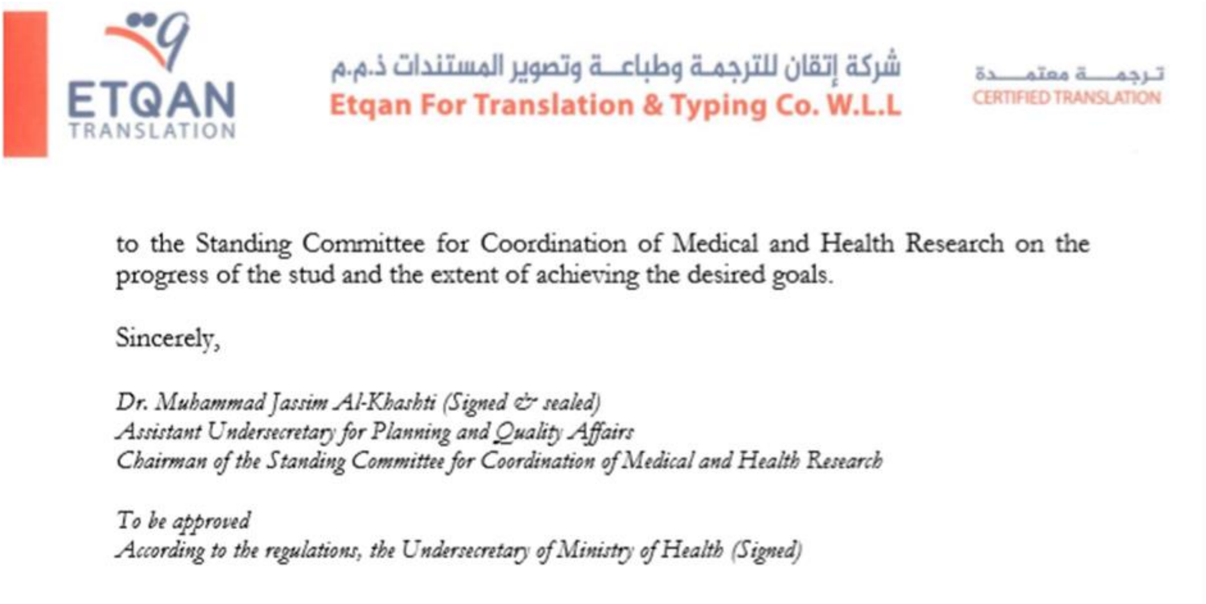


to the Standing Committee for Coordination of Medical and Health Research on the progress of the stud and the extent of achieving the desired goals.

Sincerely,

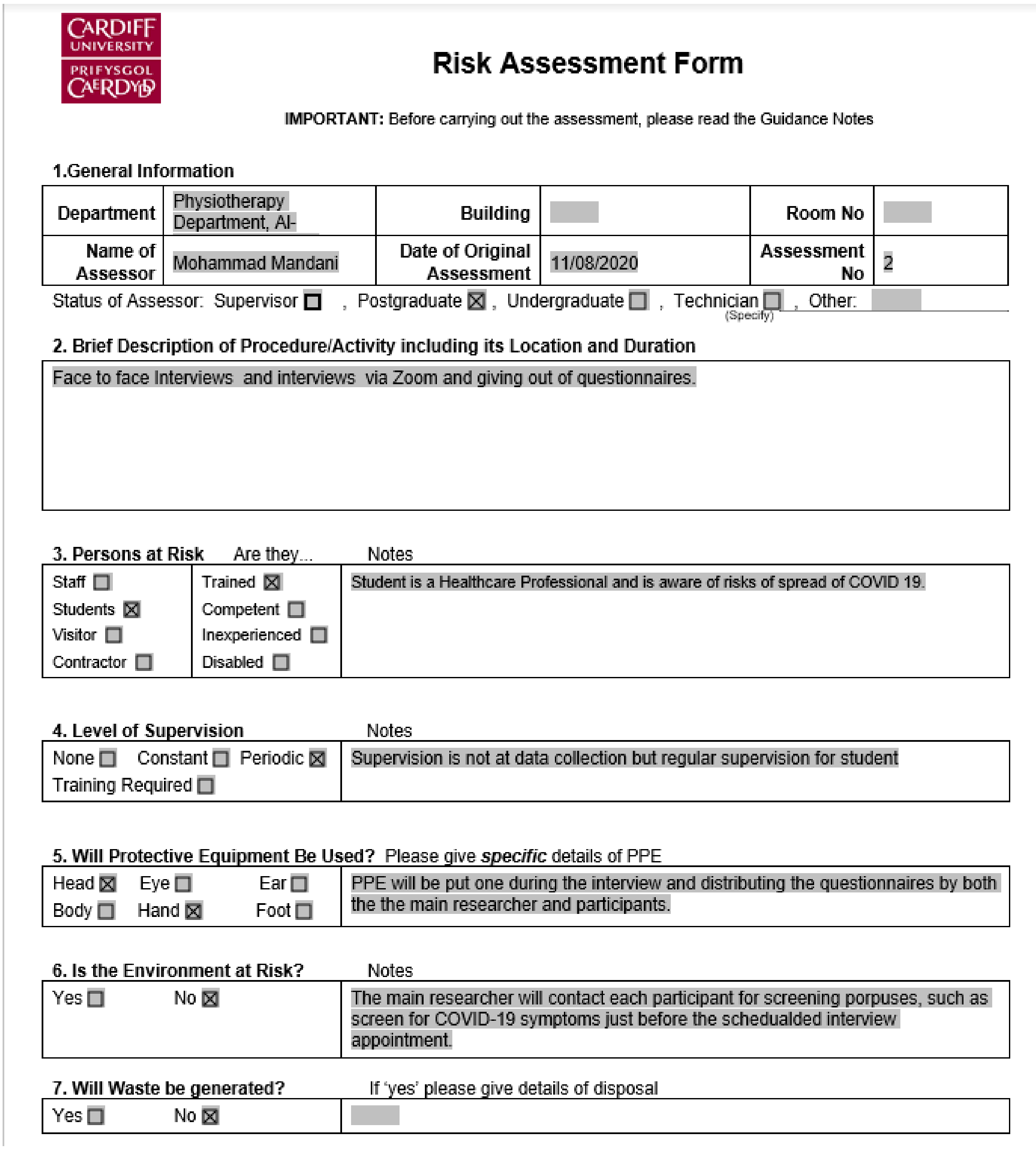
Dr. Muhammad Jassim Al-Khashti (Signed & sealed)
Assistant Undersecretary for Planning and Quality Affairs
Chairman of the Standing Committee for Coordination of Medical and Health Research

To be approved
According to the regulations, the Undersecretary of Ministry of Health (Signed)

Appendix 21: Risk assessment

Hazard	Who is affected?	Potential for harm	Risk likelihood	Risk severity	Reducing the risk
Emotional destress	Participants (patients and physiotherapists)	2	1	2	Certain topics that are discussed in the interviews will be reviewed and considered to circumvent any psychological discomforts, such as distress and uncomfortable feelings. If patients become distressed due to pain persistent, the researcher has clinical background and experience in back pain and would fix this by explain the nature of pain and emphasize the importance of self-management strategies. However, the researcher also consider physiotherapists as they may feel they are under questioning, the researcher set the interview questions in a sensitive and supportive manner.
Fire safety	Participants & researchers	1	1	3	The researcher will follow the fire safety guidance for where the interview will take place, and will inform the all participants about the process off fire alarm evacuation in order to keep him self and all participants as safe as possible.

Appendix 22: COVID-19 risk assessment



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PRIFYSGOL CAERDYDD

Risk Assessment Form

IMPORTANT: Before carrying out the assessment, please read the Guidance Notes

1.General Information

Department	Physiotherapy Department, Al-	**Building**		**Room No**	
Name of Assessor	Mohammad Mandani	**Date of Original Assessment**	11/08/2020	**Assessment No**	2

Status of Assessor: Supervisor ☐ , Postgraduate ☒ , Undergraduate ☐ , Technician ☐ , Other: (Specify)

2. Brief Description of Procedure/Activity including its Location and Duration

Face to face Interviews and interviews via Zoom and giving out of questionnaires.

3. Persons at Risk	Are they...	Notes
Staff ☐ Students ☒ Visitor ☐ Contractor ☐	Trained ☒ Competent ☐ Inexperienced ☐ Disabled ☐	Student is a Healthcare Professional and is aware of risks of spread of COVID 19.

4. Level of Supervision	Notes
None ☐ Constant ☐ Periodic ☒ Training Required ☐	Supervision is not at data collection but regular supervision for student

5. Will Protective Equipment Be Used? Please give ***specific*** details of PPE

Head ☒ Eye ☐ Ear ☐ Body ☐ Hand ☒ Foot ☐	PPE will be put one during the interview and distributing the questionnaires by both the the main researcher and participants.

6. Is the Environment at Risk?	Notes
Yes ☐ No ☒	The main researcher will contact each participant for screening porpuses, such as screen for COVID-19 symptoms just before the schedualded interview appointment.

7. Will Waste be generated?	If 'yes' please give details of disposal
Yes ☐ No ☒	

8. Hazards involved

Work Activity / Item of Equipment / Procedure / Physical Location	Hazard	Control Measures and Consequence of Failure	Likelihood (0 to 5)	Severity (0 to 5)	Level of Risk
Face to face interview	Spread of COVIDS-19	3M plus distance maintained throughout interview	1	4	5
Giving questionnaires	Spread of COVID 19	Hand washing prior to giving out questionnaires and end of interview	1	4	5
Interview	Spread of COVID-19	Particiant uses hand sanitiser	1	4	5
Interview	Spread of COVID-19	Prior to interview screen participant for COVID 19 symptoms	1	4	5
Interview	Spread of COVID-19	Contact participant if interviewer becomes COVID 19 positive and participant to contact researcher if becomes COVID19 Positive	1	4	5

9. Chemical Safety (COSHH Assessment)

Before completing this section please refer to the Cardiff University COSHH training on learning central for guidance. Enrolment on to the training will be via the local learning central administrator.

Hazard	Control Measures	Likelihood (0 to 5)	Severity (0 to 5)	Level of Risk

Scoring Criteria for Likelihood (chance of the hazard causing a problem)
0 – Zero to extremely unlikely, 1 – Very Unlikely, 2 – Unlikely, 3 – Likely, 4 – Very Likely, 5 – Almost certain to happen

Scoring Criteria for Severity of Injury (or illness) resulting from the hazard
0 – No injury, 1 – First Aid is adequate, 2 – Minor injury, 3 – "Three day" injury, 4 – Major injury, 5 – Fatality or disabling injury

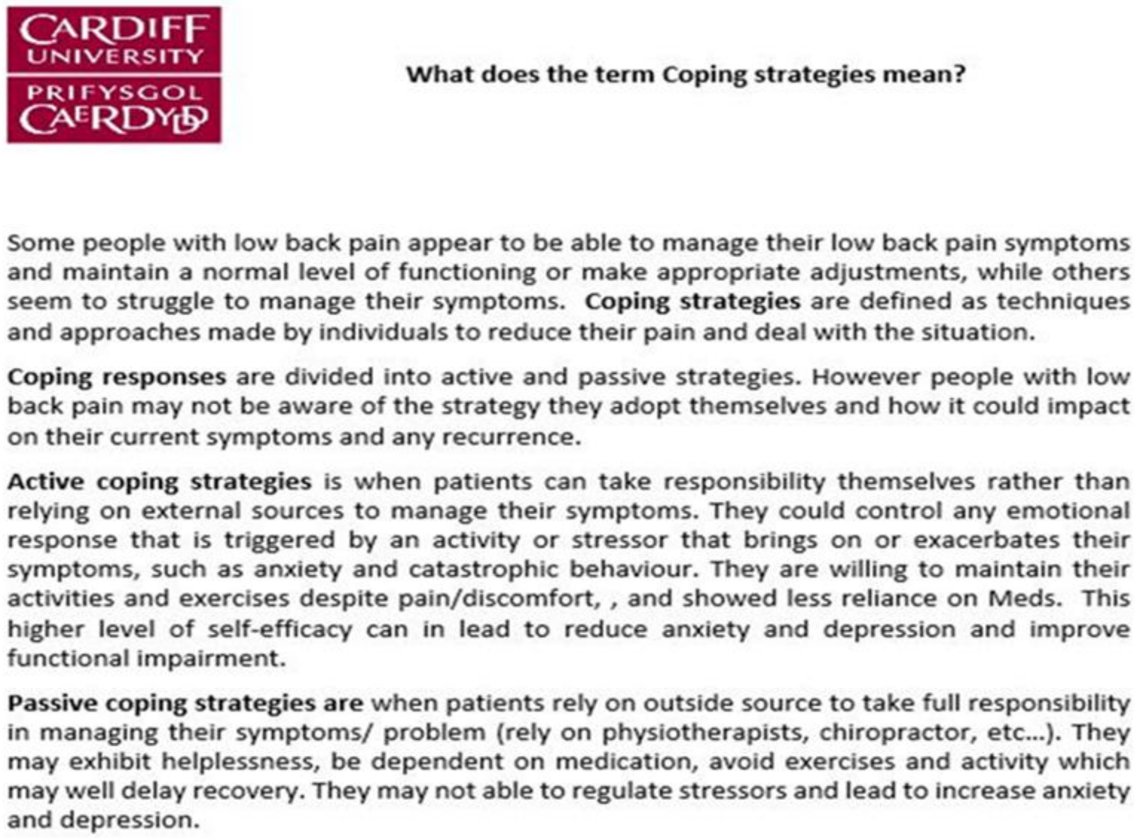
10. Source(s) of information used to complete the above

WHO https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public

11. Further Action

Highest Level of Risk Score	Action to be taken

Appendix 23: Brief of coping strategies



What does the term Coping strategies mean?

Some people with low back pain appear to be able to manage their low back pain symptoms and maintain a normal level of functioning or make appropriate adjustments, while others seem to struggle to manage their symptoms. **Coping strategies** are defined as techniques and approaches made by individuals to reduce their pain and deal with the situation.

Coping responses are divided into active and passive strategies. However people with low back pain may not be aware of the strategy they adopt themselves and how it could impact on their current symptoms and any recurrence.

Active coping strategies is when patients can take responsibility themselves rather than relying on external sources to manage their symptoms. They could control any emotional response that is triggered by an activity or stressor that brings on or exacerbates their symptoms, such as anxiety and catastrophic behaviour. They are willing to maintain their activities and exercises despite pain/discomfort, , and showed less reliance on Meds. This higher level of self-efficacy can in lead to reduce anxiety and depression and improve functional impairment.

Passive coping strategies are when patients rely on outside source to take full responsibility in managing their symptoms/ problem (rely on physiotherapists, chiropractor, etc…). They may exhibit helplessness, be dependent on medication, avoid exercises and activity which may well delay recovery. They may not able to regulate stressors and lead to increase anxiety and depression.

Appendix 24: An example of codes, subtheme and forming ‘Patients Coping responses’ theme for patients who adopted mainly active coping strategies.

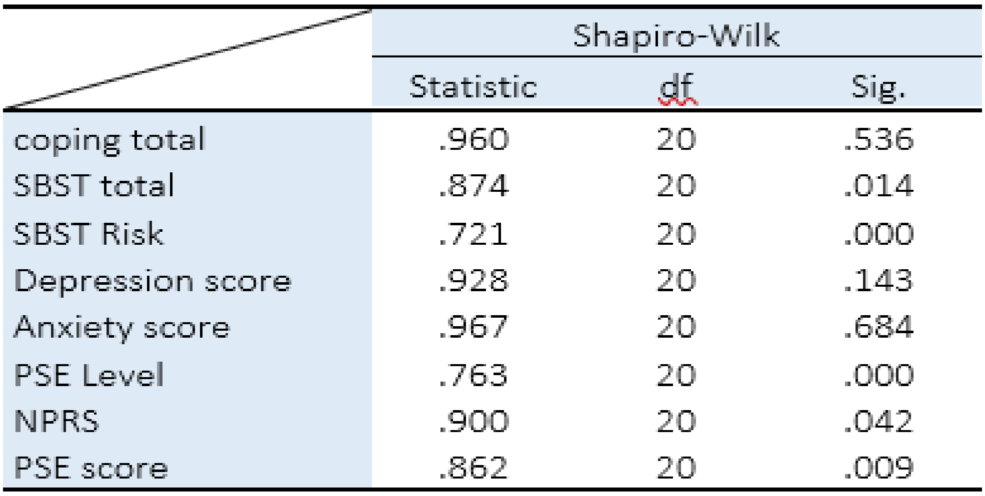
codes	Patients whose contributed to each code	Sub-theme	Theme
Pt ability to manage a time for SMS.	PAS (1,3,6 &10)	Characteristic of people who mainly used active coping strategies	Patients Coping responses with CLBP
Pt commitment to HTP.	All PAS group		
Patient is confident to self-manage the pain at home.	All PAS group		
Patients use different approach to self-manage the pain.	All PAS group		
Pt able to control pain after PT course.	All PAS group		
Pt ability to split exercises into groups for each day.	PAS (2,5,7 & 8)		
Pt ability to deal with too many home exercises.	PAS (1 &10)		
Patient adopts active lifestyle.	PAS (1 & 10)		
Pt realised what things helps cope better with the pain.	All PAS group		
Patient commitment to PT advice.	PAS (1,4,6 & 10)		
Pt seeks for active treatment rather than medical treatment.	All PAS group		
Patient ability to actively cope with pain	All PAS group		
less reliance on medications	All PAS group		

Paying no attention to pain. Using ignoring pain technique. Patient neither think too much of the pain nor fear from moving post PT course. walking activities to control stress and pain. Using home exercises to cope with pain. Using heat therapy to cope with severe pain at work. Ability to control psychological symptoms including anxiety and depression.	PAS (1,3 & 4) PAS (1,3,6 &10) All PAS group PAS (1 & 6) All PAS group PAS (1,6 & 10) PAS (4 & 6)		

An example of codes, creating subthemes and forming a ‘The importance of educating patient’ theme for physiotherapists

Codes	Physiotherapists whose contributed to each code	Sub-theme	Theme
Education tailored towards individual. Importance of facilitating insight to Pt. Importance of time spend educating patient. Full history taken prior to education. Flexibility of PT toward educating patients. The importance of educating PPS before given the SMS program. Educating pt based on assessment. The importance of educating pt with psychological issues Educational role of PT toward the danger of using medication The importance of educating pt about nature of CLBP educational role is obligatory for all PT. Absence the educational role of physicians leads patients to cope more passively. CLBP patients need to be educated.	PT (2,3,4,5 & 6) PT (1 & 4) PT (4,5 & 6) PT(6) PT (3,4,5 & 6) All physiotherapists All physiotherapists PT (2,3,4,5 & 6) PT (5) PT (1,4,5 & 6) PT(6) PT (3,4 & 5) All physiotherapists	The educational role of therapists.	The importance of educating patient.
Education eases the treatment. educational role of PT enhances patients’ trust. Educational role of PT changes pt behavior and life style PT educational role increases pts self-confidence. Educational role of PT reduces fear of ex. PT educational role facilitates coping responses. Education leads to SMS adherence. educational role enhances pt reassurance .	PT (2 & 6) PT (3 & 5) PT (5 & 6) PT (2) PT (6) PT (4,5 & 6) PT (2,3 & 6) PT (4 & 6)	The benefits of PT educational role.	The importance of educating patient.

Appendix 25: Normality test using Shapiro-Wilk



	Shapiro-Wilk		
	Statistic	df	Sig.
coping total	.960	20	.536
SBST total	.874	20	.014
SBST Risk	.721	20	.000
Depression score	.928	20	.143
Anxiety score	.967	20	.684
PSE Level	.763	20	.000
NPRS	.900	20	.042
PSE score	.862	20	.009

Appendix 26: Table A. Individual scores on Numeric Pain Rating Scale, Pain Self-Efficacy Questionnaire, the Hospital Anxiety and Depression Scale and STarT Back screening tool (pre- and post-physiotherapy sessions)

	Patient Type	NPRS	PSEQ score	Self-efficacy Level	HADS (Anxiety score)	HADS (Anxiety level)	HADS (Depression score)	HADS (Depression level)	SBST score	SBST sub-score	SBST risk level
Participant 1											
Pre-physiotherapy sessions	PAS	2	60	High	9	Borderline abnormal	6	Normal	3	1	Low
Post-physiotherapy sessions	PAS	3	55	High	11	Abnormal	8	Borderline abnormal	2	1	Low
Participant 2											
Pre-physiotherapy sessions	PPS	7	18	Low	11	Abnormal	12	Abnormal	7	3	Medium
Post-physiotherapy sessions	PPS	7	24	Low	13	Abnormal	11	Abnormal	6	4	High
Participant 3											
Pre-physiotherapy sessions	PAS	7	55	High	4	Normal	3	Normal	2	1	Low
Post-physiotherapy sessions	PAS	1	57	High	4	Normal	3	Normal	3	2	Low
Participant 4											
Pre-physiotherapy sessions	PAS	6	48	High	1	Normal	4	Normal	5	1	Medium
Post-physiotherapy sessions	PAS	1	52	High	2	Normal	5	Normal	2	0	Low
Participant 5											

Pre-physiotherapy sessions	PPS	10	15	Low	18	Abnormal	16	Abnormal	9	5	High
Post-physiotherapy sessions	PPS	7	24	Low	9	Borderline abnormal	11	Abnormal	8	4	High
Participant 6											
Pre-physiotherapy sessions	PAS	6	47	High	8	Borderline abnormal	2	Normal	2	1	Low
Post-physiotherapy sessions	PAS	2	51	High	6	Normal	7	Normal	2	1	Low
Participant 7											
Pre-physiotherapy sessions	PPS	7	13	Low	15	Abnormal	19	Abnormal	8	4	High
Post-physiotherapy sessions	PPS	7	19	Low	17	Abnormal	15	Abnormal	7	4	High
Participant 8											
Pre-physiotherapy sessions	PPS	8	19	Low	13	Abnormal	12	Abnormal	7	4	High
Post-physiotherapy sessions	PPS	5	29	Low	12	Abnormal	10	Borderline abnormal	7	5	High
Participant 9											
Pre-physiotherapy sessions	PPS	7	19	Low	9	Borderline abnormal	11	Abnormal	6	3	Medium
Post-physiotherapy sessions	PAS	2	52	High	6	Normal	3	Normal	3	1	Low
Participant 10											
Pre-physiotherapy sessions	PAS	5	46	High	6	Normal	5	Normal	3	1	Low
Post-physiotherapy sessions	PAS	3	43	High	2	Normal	4	Normal	3	0	Low

Key: NPRS=Numerical Pain Rating Scale, ranging (from 0 to 11), PSEQ=Pain self-efficacy questionnaire, ranging from (0 to 60), Low self-efficacy: (total score<40), High self-efficacy : (total score>40), HADS=Hospital Anxiety and Depression Scale, normal: (0-7) borderline: (8-11), abnormal: (12-21) SBST= STarT back screening tool, Low risk: 3 or less of total score, Medium risk: 4 or more in total score (3 or less in subscore), High risk: 4 or more in total score (4 or more in subscore), non-shaded lines= patients who adopted mainly active strategies, shaded lines= patients who adopted mainly passive strategies.

Appendix 27. Patients' scores on all items of Pain Self-Efficacy Questionnaire

Question (1) from Pain self-efficacy questionnaire "I can enjoy things despite the pain".

Patients adopted mainly active strategies group (n=5)			**Patients adopted mainly passive strategies group (n=5)**		
Patients number	Pre-PT sessions	Post- PT sessions	Patients number	Pre-PT sessions	Post- PT sessions
PAS1	6	5	PPS2	1	3
PAS3	5	5	PPS5	4	4
PAS4	5	6	PPS7	1	2
PAS6	4	5	PPS8	1	4
PAS10	5	5	PPS9	1	5

Key: PT= physiotherapy, 0= not at all confident, 6= completely confident, PAS= patients adopted mainly active strategies, PAS=patients adopted mainly passive strategies.

Question (2) from Pain self-efficacy questionnaire "I can do most of the household chores (e.g., tidying-up, washing dishes, etc.), despite the pain" .

Patients adopted mainly active strategies group (n=5)			**Patients adopted mainly passive strategies group (n=5)**		
Patients number	Pre-PT sessions	Post- PT sessions	Patients number	Pre-PT sessions	Post- PT sessions
PAS1	6	6	PPS2	1	3
PAS3	4	6	PPS5	1	1
PAS4	5	6	PPS7	1	3
PAS6	5	5	PPS8	1	3
PAS10	4	5	PPS9	2	6

Key: PT= physiotherapy, 0= not at all confident, 6= completely confident, PAS= patients adopted mainly active strategies, PAS=patients adopted mainly passive

Question (3) from Pain self-efficacy questionnaire "I can socialise with my friends or family members as often as I used to do, despite the pain." .

Patients adopted mainly active strategies group (n=5)			Patients adopted mainly passive strategies group (n=5)		
Patients number	Pre-PT sessions	Post- PT sessions	Patients number	Pre-PT sessions	Post- PT sessions
PAS1	6	5	PPS2	2	2
PAS3	6	6	PPS5	0	6
PAS4	5	6	PPS7	1	1
PAS6	5	6	PPS8	2	4
PAS10	3	3	PPS9	2	5

Key: PT= physiotherapy, 0= not at all confident, 6= completely confident, PAS= patients adopted mainly active strategies, PAS=patients adopted mainly passive

Question (4) from Pain self-efficacy questionnaire "I can cope with my pain in most situations." .

Patients adopted mainly active strategies group (n=5)			Patients adopted mainly passive strategies group (n=5)		
Patients number	Pre-PT sessions	Post- PT sessions	Patients number	Pre-PT sessions	Post- PT sessions
PAS1	6	6	PPS2	2	2
PAS3	6	5	PPS5	3	2
PAS4	5	6	PPS7	2	1
PAS6	5	5	PPS8	2	2
PAS10	5	4	PPS9	2	5

Key: PT= physiotherapy, 0= not at all confident, 6= completely confident, PAS= patients adopted mainly active strategies, PAS=patients adopted mainly passive

Question (5) from Pain self-efficacy questionnaire “I can do some form of work, despite the pain. (“work” includes housework, paid and unpaid work).” .

Patients adopted mainly active strategies group (n=5)			**Patients adopted mainly passive strategies group (n=5)**		
Patients number	Pre-PT sessions	Post- PT sessions	Patients number	Pre-PT sessions	Post- PT sessions
PAS1	6	6	PPS2	1	3
PAS3	4	5	PPS5	0	0
PAS4	5	5	PPS7	2	3
PAS6	5	5	PPS8	2	5
PAS10	4	3	PPS9	2	5

Key: PT= physiotherapy, 0= not at all confident, 6= completely confident, PAS= patients adopted mainly active strategies, PAS=patients adopted mainly passive

Question (6) from Pain self-efficacy questionnaire “I can still do many of the things I enjoy doing, such as hobbies or leisure activity, despite pain.” .

Patients adopted mainly active strategies group (n=5)			**Patients adopted mainly passive strategies group (n=5)**		
Patients number	Pre-PT sessions	Post- PT sessions	Patients number	Pre-PT sessions	Post- PT sessions
PAS1	6	6	PPS2	2	1
PAS3	6	6	PPS5	1	4
PAS4	5	5	PPS7	0	2
PAS6	4	5	PPS8	2	2
PAS10	5	3	PPS9	2	5

Key: PT= physiotherapy, 0= not at all confident, 6= completely confident, PAS= patients adopted mainly active strategies, PAS=patients adopted mainly passive

Question (8) from Pain self-efficacy questionnaire "I can still accomplish most of my goals in life, despite the pain." .

Patients adopted mainly active strategies group (n=5)			Patients adopted mainly passive strategies group (n=5)		
Patients number	Pre-PT sessions	Post- PT sessions	Patients number	Pre-PT sessions	Post- PT sessions
PAS1	6	6	PPS2	3	3
PAS3	6	6	PPS5	3	0
PAS4	5	5	PPS7	1	3
PAS6	6	5	PPS8	2	2
PAS10	6	5	PPS9	2	6

Key: PT= physiotherapy, 0= not at all confident, 6= completely confident, PAS= patients adopted mainly active strategies, PAS=patients adopted mainly passive

Question (9) from Pain self-efficacy questionnaire "I can live a normal lifestyle, despite the pain" .

Patients adopted mainly active strategies group (n=5)			Patients adopted mainly passive strategies group (n=5)		
Patients number	Pre-PT sessions	Post- PT sessions	Patients number	Pre-PT sessions	Post- PT sessions
PAS1	6	6	PPS2	2	2
PAS3	6	6	PPS5	3	2
PAS4	5	6	PPS7	3	2
PAS6	5	5	PPS8	2	3
PAS10	5	6	PPS9	2	5

Key: PT= physiotherapy, 0= not at all confident, 6= completely confident, PAS= patients adopted mainly active strategies, PAS=patients adopted mainly passive

Question (10) from Pain self-efficacy questionnaire “I can gradually become more active, despite the pain.” .

Patients adopted mainly active strategies group (n=5)			Patients adopted mainly passive strategies group (n=5)		
Patients number	Pre-PT sessions	Post- PT sessions	Patients number	Pre-PT sessions	Post- PT sessions
PAS1	6	5	PPS2	3	3
PAS3	6	6	PPS5	3	3
PAS4	4	5	PPS7	2	1
PAS6	5	5	PPS8	2	3
PAS10	5	5	PPS9	1	5

Key: PT= physiotherapy, 0= not at all confident, 6= completely confident, PAS= patients adopted mainly active strategies, PAS=patients adopted mainly passive.