

**PHYSIOTHERAPY MODALITIES USED IN THE
MANAGEMENT OF
CHRONIC LOW BACK PAIN**

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Witwatersrand, in partial fulfilment of the requirement for the degree
of
Master of Science in Physiotherapy

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DECLARATION

I, Vaneshveri Naidoo declare that this research report is my own work. It is being submitted for the degree of Master of Science in Physiotherapy at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other University

_____ [Signature of candidate]

_____ day of _____, 2009

DEDICATION

**In memory of my father
Manogaran Moodley
1943-1992**

AND

**My grandmother
Premthevi Moodley
1924-2008**

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ABSTRACT

Low back pain (LBP) is one of the commonest and most costly medical problems in both the low and high income countries accounting for 75-90% of compensation costs. Compensation costs for LBP in South Africa in the year 2000 were approximately two hundred million rand and about 30 000 people suffer from neck and back problems on a daily basis. Physiotherapy treatment modalities are commonly used in the management of LBP but there is no consensus on the choice of treatment modalities.

A cross-sectional survey was used to investigate the treatment modalities used by physiotherapists in Kwazulu-Natal (KZN) for the management of chronic low back pain (CLBP). The objectives of the study were to establish the commonly used physiotherapy modalities in the management of CLBP, the reasons behind the selection of those modalities and the extent to which the physiotherapists in KZN used evidence based modalities when managing CLBP. Self-Administered questionnaires were posted to all registered physiotherapists in KZN, that is, six hundred and eighty-five (685) physiotherapists.

A 31% (213) response rate was achieved, of which 20.6% (141) met the inclusion criteria and 10.5% (72) were excluded. The results established that general exercises (30%); spinal mobilisation (28%); myofascial release (18%), education (12%) and training of local stabilisers (12%) were the commonly used treatment modalities in the management of CLBP. The key reasons for the selection of the treatment modalities were the undergraduate education received; own clinical experience and the attendance of postgraduate courses/physiotherapy conferences. Treatment modalities were not selected on the basis of the current available evidence hence evidence-based practice is not employed by physiotherapists in KZN in the management of patients with CLBP.

Chapter 1

1.0 BACKGROUND AND NEED

1.1 Introduction

Low back pain (LBP) is one of the commonest and most costly medical problems in industrialised countries (Guzman et al., 2007; Diamond and Borenstein, 2006; Cairns et al., 2006; Quittan, 2002; Mannion et al., 1999). In Canada and the United States of America (USA), LBP is the largest cause of compensation (Khadilkar et al., 2005). It is also a key reason for visits to health care professionals (Khadilkar et al., 2005). In the UK, an estimated 9% of patients with LBP seek physiotherapy treatment (Cairns et al., 2006). In Norway LBP accounts for 14-15% of all sickness compensations lasting longer than two weeks (Hagan, 2005). O' Sullivan (2000), reports that CLBP disorder accounts for 75-90% of compensation costs. Statistics on low back pain / chronic back pain from low income countries are scarce (Omokhodion and Sanya, 2003). Van Vuuren et al. (2006) reported that in South Africa, 30 000 people suffer from neck and back problems on a daily basis. They further state that 10% of these neck and back problems will become chronic. It was also reported in their study that compensation costs for LBP in South Africa in the year 2000 was approximately two hundred million rand.

Acute episodes of LBP have a favourable prognosis and resolve fairly quickly (Diamond et al., 2006; Koes et al., 2006; Khadilkar et al., 2005; O' Sullivan, 2000). However there are a small but significant number of people, approximately 5-10%, who will develop chronic low back pain (CLBP) (Diamond et al., 2006; Ferreira et al., 2006; Koes et al., 2006; Cassidy et al., 2005; Aure et al., 2003; Quittan, 2002; O' Sullivan, 2000; Mannion et al., 1999). In contrast, Khadilkar et al. (2005) reported a higher incidence of CLPB in Canada and the USA (10-20%). Wheeler (2007), states that 3-4% of the American population is permanently disabled because of CLBP.

O' Sullivan (2000) reported a 5-10% disability rate in people with CLBP in the western industrialised world. Disability due to chronic low back pain is increasing faster than any other form of incapacity (Mannion et al., 1999).

The three main consequences of low back pain are pain, disability and limited function (including activities of daily living) and decreased productivity (including work loss) (Kendall, 1997). Pain is defined as chronic if the pain persists for three months or longer (Waddell, 1999; O' Sullivan, 2000; Koes et al., 2006). CLBP presents as a persistent, disabling condition. It has a less favourable prognosis and results in considerable socioeconomic costs. These costs are as a result of repeated treatments, long term work absenteeism and social support (unemployment compensation) (Koes et al., 2006; Khadilkar et al., 2005; Diamond et al., 2005; Ferreira et al., 2006).

CLBP has a profound effect on quality of life. It results in loss of function, reduced activity and work loss (absenteeism), (Staal et al., 2005; Kendall et al., 1997). It has been found that if back pain persists for a long time the probability of returning to work is reduced and it is less likely that the person would be able to resume normal functional activities (Kendall et al., 1997). Long term disability and loss of productivity results in negative effects on patients, their families and society (Kaapa et al., 2006; Staal et al., 2005; Kendal et al., 1997). Quality of life and general well being are important outcomes in the management of CLBP. "Enabling people to keep active in order to maintain work skills and relationships is an important outcome" (Kendall et al., 1997)

The management of LBP includes a variety of interventions, for example, pharmacological treatment, physiotherapy treatment, surgery, cognitive and behavioural therapy and alternative therapies (Khadilkar et al., 2005; Bogduk, 2004). The literature has revealed that a multi-dimensional approach based on the bio-psycho-social model is required in the management of CLBP (Kaapa et al., 2006; Hagan et al., 2005; O' Sullivan, 2005; Lang et al., 2003).

Physiotherapy intervention is a common form of conservative management for CLBP (Goldby et al., 2006; Cairns et al., 2006; O' Sullivan, 2005). Physiotherapy intervention includes various treatment modalities namely, manual therapy (manipulation and mobilisation), exercise, advice and education as well as multidisciplinary group rehabilitation which includes the psychosocial aspect of CLBP (Goldby et al., 2006; Cairns et al., 2006; O' Sullivan, 2005). These modalities have been effectively used in the management of CLBP (Goldby et al., 2006; Cairns et al., 2006; O' Sullivan, 2005). Exercise and manual therapy are the most frequently used physiotherapy modalities (Goldby et al., 2006; Cairns et al., 2006; O' Sullivan, 2005). There is strong evidence proving the efficacy of exercise therapy in the management of CLBP in the long term as compared to manual therapy (Goldby et al., 2006; Cairns et al., 2006), but the evidence for the effectiveness of specific exercises remains inconclusive (Cairns et al., 2006; Mannion et al., 1999).

The management of acute and chronic low back pain warrants separate consideration as these conditions may respond differently to the same interventions (Khadilkar et al., 2005). At present there is an increasing trend towards evidence-based care (van Tulder et al., 2006) and the literature has revealed that the physiotherapy field is no exception to this, especially with regards to the management of CLBP.

Considering the large socio-economic impact as well as its negative effect in society and on quality of life, the management of CLBP needs to be scrutinised. It is imperative that the management of CLBP follows the trend of the evidence as the evidence proves the most effective management strategy. The aim of curbing disability as a result of CLBP will be attainable, thus resulting in an industrious individual. Hence the vast burden society and government is challenged with, will be alleviated.

1.2 Problem Statement

CLBP has a profound effect on an individual's quality of life. It results in loss of function, decreased activity and decreased productivity (work loss). Thus CLBP impacts on the prevalence of disability and negatively affects the socio-economic well being of the individual as well as that of the country, as South Africa is a developing country and a substantial number of the population is involved in manual work which may predispose them to CLBP. Physiotherapy intervention can assist in decreasing/alleviating the consequences of CLBP. No studies have been done in South Africa/ Kwazulu-Natal (KZN) to assess the physiotherapy intervention used in the management of CLBP.

1.3 Research Question

Which physiotherapy treatment modalities do physiotherapists in Kwazulu-Natal use in the management of CLBP?

1.4 Aim of the Study

To investigate the treatment modalities which are currently being used in the management of chronic low back pain by physiotherapists in KZN.

1.4.1 Objectives of the Study

The objectives of the study were to:

- Establish the commonly used physiotherapy modalities in the management of CLBP by physiotherapists in KZN.
- Establish why the KZN physiotherapists select certain modalities to manage CLBP.
- Establish to what extent physiotherapists in KZN use evidence based modalities when managing CLBP.

1.5 Significance of the Study

In South Africa, about 30 000 people suffer from neck and back problems on a daily basis and compensation costs for the year 2000 were approximately two hundred million rands (Van Vuuren et al., 2006). Disability due to chronic low back pain is increasing faster than any other form of incapacity. The findings of this study will illustrate the treatment modalities that are currently being used by KZN physiotherapists. This can then be compared with what is found in the literature review which demonstrates what the current trend of the evidence is regarding the management of patients with CLBP. EBP cannot be over emphasised. Studies have revealed that EBP reduces treatment costs, improves quality and appropriateness of care, treatment outcomes as well as the efficiency and effectiveness of the medical practitioner involved (Byrne et al., 2005; Manchikianti, 2008). Information regarding best practice is continually evolving, hence information becomes outdated. Thus it is imperative to stay updated to provide the best possible care (Research Committee of the Australian Physiotherapy Association and invited contributors, 1999).

Chapter 2

2.0 LITERATURE REVIEW

2.1 Introduction

This section deals with the review of the literature that was relevant to this study. For the literature review the following search engines were used: Cochrane collaboration; Pedro; Ebscohost; Cinahl; Pubmed and BMJ clinical evidence. The search words that were used for the literature search were: chronic low back pain; prevalence of low back pain; low back pain management; spinal manipulation; spinal mobilisation; exercise therapy; multidisciplinary rehabilitation; traction; ultrasound therapy; interferential therapy; education; psychosocial factors; drug therapy (NSAIDS; muscle relaxants; analgesics; corticosteroids; epidural steroid injections) and lumbar corset/support.

The literature review was done using the following subheadings:

- 2.2 Definition of Low Back Pain (LBP) – acute and chronic
- 2.3 Prevalence of low back pain (both acute and chronic)
- 2.4 Causes of chronic low back pain
- 2.5 Management of chronic low back pain
 - 2.5.1 Medical (general)
 - 2.5.2 Physiotherapy management of LBP:
 - 2.5.2.1 Spinal mobilisation and manipulation
 - 2.5.2.2 Exercise therapy
 - 2.5.2.3 Education
 - 2.5.2.4 Electrotherapy
 - 2.5.3 Psychosocial
 - 2.5.4 Multidisciplinary rehabilitation

- 2.6 Importance of using evidence when managing low back pain (or when choosing a treatment modality for low back pain)
- 2.7 Review of methodology
- 2.8 Conclusion

2.2 Definition of Low Back Pain

Low back pain is defined as “pain, muscle tension or stiffness localised below the costal margin and above the inferior gluteal folds, with or without leg pain (sciatica)” (Koes et al., 2006). May (2007) defines low back pain as “symptoms felt in the lumbar region with or without referral, and accompanying limitation of function.” Goldby et al. (2006) states that it is a disorder of the lumbar region with pain being the most common characteristic.

Acute low back pain is defined as pain that persists for less than six weeks while subacute low back pain is defined as pain that lasts between six and twelve weeks (Koes et al., 2006; Waddell, 1999). Recurrent low back pain is a current bout of pain of less than three months, having experienced previous attacks (Waddell, 1999).

Chronic low back pain is defined as continuous pain that persists for more than three months (Koes et al., 2006; Mohseni-Bandpei, 2006; Waddell, 1999). Ferreira et al. (2007) defines CLBP as pain and disability that persists for more than three months.

The definitions of low back pain are a guideline that assists us in determining the stage/phase of tissue healing, precautions that need to be taken as well as the most appropriate treatment techniques/modalities that need to be employed when managing patients with low back pain. It also assists us in providing apt advice to patients with low back pain.

2.3 Prevalence of low back pain

It is extensively documented that low back pain is one of the most common and costly pandemic medical conditions (May, 2007; Dankaerts et al., 2006; Byrne et al., 2006; Mohseni-Bandpei et al., 2006; Koes et al., 2006; O' Sullivan, 2005; Aure et al., 2003; O' Sullivan, 2000). Statistics on low back pain / chronic back pain in the general population from low income countries are scarce (Omokhodion and Sanya, 2003), however it is stated that most people will experience LBP at least once in their life-time (Koes et al., 2006; Ferriera et al., 2006; O' Sullivan, 2005).

LBP has been reported to affect up to 80% of people world-wide in their lifetime (May, 2007; Dankaerts et al., 2006; Byrne et al., 2006; Mohseni-Bandpei et al., 2006; Cassidy et al., 2005; O' Sullivan, 2000). Sculco et al. (2001) reported a 60% to 90% lifetime prevalence of LBP in the United States (US). The reported life-time prevalence of low back pain varies between 49% and 90% in western countries (May, 2007; Koes et al., 2006; Ferreira et al., 2006; O' Sullivan, 2005; Aure et al., 2003; O' Sullivan 2000). However Quittan (2002) reported the lifetime prevalence of LBP in western countries to be between 25% and 30%. The reported yearly prevalence of LBP in western countries varies between 30% and 40% (May, 2007; Byrne et al., 2006; Mohseni-Bandpei et al., 2006; O' Sullivan, 2006), and the reported point prevalence varies between 12% and 30% (Koes et al., 2006). The point prevalence of LBP world-wide is between 15% and 30% (Cassidy et al., 2005).

In South Africa, 30 000 people suffer from neck and back problems on a daily basis, 10% of which will become chronic (Van Vuuren et al., 2006). The point prevalence of LBP in a South African (SA) steel industry was found to be 35.8% Van Vuuren et al. (2007) and 37.6% in a SA manganese industry (Van Vuuren et al., 2005).

The findings of a systemic review (SR) conducted by Louw et al. (2007) concluded that the prevalence of LBP in Africa is rising and in keeping with the developed (western) countries with regard to point, yearly and lifetime prevalence's.

Omokhodion (2002) conducted a cross-sectional study to determine the prevalence and risk factors of LBP in a Nigerian rural community. The study revealed that 40% of the study population reported a yearly prevalence of LBP, while 33% of the study population reported LBP at the time of the study. In Sanya et al. (2005), a study on the prevalence of LBP in industrial workers in Nigeria, a point prevalence of 59.7% and a yearly prevalence of 59.5% was found. Fabunmi et al. (2005) investigated the prevalence of LBP in peasant farmers in Nigeria and found that the yearly prevalence of LBP was 72.4%. The same study also found that prevalence increased with age as well as the number of years involved in farming.

Gilgil et al. (2005) studied the prevalence of LBP in a developing urban setting in Turkey. The reported lifetime, yearly and point prevalence's were 46.6%, 35.9% and 20.1% respectively. The authors stated that in comparison to other developing countries the point prevalence of LBP in Turkey is higher and approximates to prevalence estimates of LBP in developed countries.

Recurrence of LBP is common, and has been reported to be between 70-80% over a 12 month period (Cairns et al., 2006; Koes et al., 2006; Goldby et al., 2006; O' Sullivan, 2005; Staal et al., 2005; O' Sullivan, 2000). Most authors report that a small number of the population (3-10%) develop CLBP (Diamond et al., 2006; Goldby et al., 2006 Ferreira et al., 2006; Koes et al., 2006; Cassidy et al., 2005; Aure et al., 2003; Quittan, 2002; O' Sullivan, 2000; Mannion et al., 1999).). O' Sullivan (2005) on the other hand reports that as much as 40% can develop CLBP.

The literature clearly shows that the prevalence of LBP world-wide (western and developing countries) is astronomical and appears to be rising. The above mentioned statistics necessitates serious consideration when selecting the management strategy for this common and costly condition. This may easily be overlooked due to the commonness of the condition despite the vast amount of research that has occurred in this field.

2.4 Causes of chronic low back pain

Various pathological conditions (lumbar disc herniations, spondylolisthesis, sciatica, spondylosis etc.) as well as trauma, can give rise to LBP (Wheeler, 2007). It has been found that a large number of patients present with non-specific low back pain, that is pain of unknown origin (Ferreira et al., 2006; Kaapa et al., 2006; Mannion et al., 1999). O' Sullivan (2000) reported that 85% of the population are classified as having non-specific low back pain. This was mainly due to inability to reach a definitive diagnosis via radiological methods. Various authors agree that the cause of CLBP remains largely unknown/non-specific in origin, that is, no underlying pathophysiological or anatomical defect can be attributed to the pain (Ferreira et al., 2006; Koes et al., 2006; Kaapa et al., 2005; O' Sullivan, 2005; Lang et al., 2003; O' Sullivan, 2000; Waddell, 1999; Mannion et al., 1999). Koes et al. (2006) states that, the most important symptoms of non-specific low back pain are, pain and disability.

O' Sullivan (2005) states that the broad classification of non-specific CLBP which embodies tissue sprains and strains that have failed to resolve within the 'normal' tissue healing time is of limited value, as it does not identify the underlying mechanism responsible for the pain. Waddell (1999) states that non-specific LBP is due to "physiologic impairment or dysfunction". The dysfunction may be due to an injury or inability to cope.

CLBP is “multifactorial” in nature, consisting of various dimensions (O’ Sullivan, 2005). These dimensions being: pathoanatomical, neurophysiological, physical and psychosocial. Kaapa et al. (2006) reiterates this. O’ Sullivan (2005) further states that the underlying mechanism driving the CLBP disorder needs to be targeted for the effective management of CLBP.

Hagan et al. (2005) reported that the constant predictors of chronic disability in patients with acute back pain are the psychosocial aspects. These aspects termed ‘yellow flags’ are: attitudes and beliefs of pain, behaviour toward pain, compensation issues, diagnosis of condition and treatment, emotions, family response to condition (LBP) and association of work (employment) with back pain (Kendall et al., 1997). Psychosocial aspects were also found to be strong predictors of CLBP (Kaapa et al., 2006; Hagan et al., 2005; Lang et al., 2003; Khadilkar et al., 2003, Waddell, 1999; Kendall et al., 1997).

Authors concur that the cause of CLBP is “multifactorial” in nature (Kaapa et al., 2006; O’ Sullivan, 2005; Lang et al., 2003; Waddell, 1999) and needs to be considered within a “biopsychosocial framework” (O’ Sullivan, 2005; Lang et al., 2003; Waddell, 1999). The “biopsychosocial model” of CLBP attributes the interaction of the physical dysfunction (biomechanical defects and physical deconditioning), psychological aspects and social aspects to the chronic pain disorder (O’Sullivan, 2005; Lang et al., 2003; Waddell, 1999). Elements of the “biopsychosocial model” are: “physical dysfunction; beliefs and coping; distress; illness behaviour and social interactions” (Waddell, 1999). Hence combinations of these factors lead to pain and disability (O’ Sullivan, 2005; Lang et al., 2003; Waddell, 1999).

Physical dysfunction usually arises from pain (nociception) which may be as a result of increased load on the muscular-skeletal system or injury. It may also be due to reduced capacity to cope as a result of poor fitness, fatigue or personal issues. (Waddell, 1999). Pain can lead to muscle spasm/guarded movements

(MS/GM) or fear avoidance behaviour (FAB). FAB can in turn lead to muscle spasm/guarded movements. FAB and MS/GM results in immobilisation and disuse. Immobilisation and disuse results in: muscle weakness; joint stiffness and loss of cardiovascular fitness. Ultimately these then result in painful musculoskeletal dysfunction. Waddell (1999)

Waddell, 1999 also hypothesises on the interaction between illness behaviour and musculoskeletal dysfunction (MSD) from a neurophysiological as well as a psychological perspective:

Neurophysiological perspective:

Injury or dysfunction results in pain and MSD. Pain results in sensitisation of pain nerves and the central nervous system (CNS). This thus results in increased nociception from non painful stimuli. Increased nociception results in muscle tension or guarded movement. Muscle tension or guarded movement causes a disuse syndrome (secondary physical changes) and reduced physical performance (disability). Disuse syndrome results in MSD. MSD in turn results in disability.

Psychological perspective:

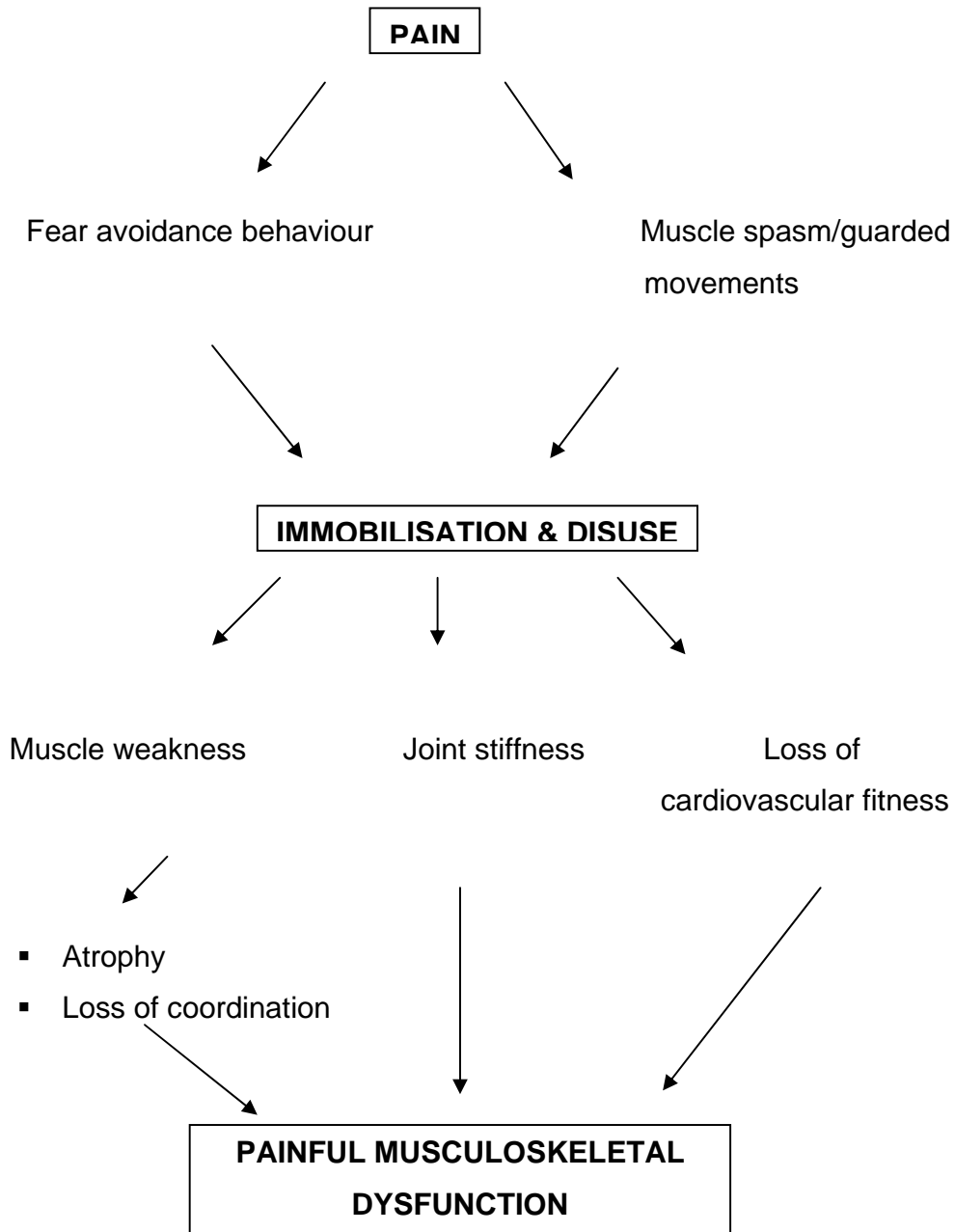
MSD can lead to preoccupation of 'symptoms'. This results in increased attention to symptoms and altered attitudes and beliefs. This thus leads to illness/pain behaviour (Altered behaviour). Altered behaviour results in disuse syndrome, guarded movements and muscle tension, which in turn results in biomechanical stress and MSD.

Wadell (1999) states/hypothesises that all these processes are interlinked and develop simultaneously.

He further states that these are not alternative models, but different perspectives of one process.

MUSCULOSKELETAL DYSFUNCTION

(Physiologic Impairment)



(Waddell, 1999)

The above illustration depicts the interaction of musculoskeletal dysfunction and illness behaviour.

Thoughts (perception) and beliefs about pain directly influence how pain is managed and its' effect on an individual. Certain thoughts and beliefs once established may become fixed and may be difficult to change. For example, fear-avoidance beliefs can lead to abnormal movement strategies due to fear of re-injury. Abnormal movement strategies are adopted to avoid the painful movements resulting in muscle imbalance and further dysfunction. "Fear of pain can be more disabling than the back pain itself" (Waddell, 1999).

Distress may result in increased attentiveness of bodily sensations. Consequently pain sensation is increased, pain tolerance is decreased and concern about pain is amplified. This increases the likelihood of seeking medical attention. Pain, emotions and psychological distress are closely linked (Waddell, 1999).

The way one ultimately behaves as a result of pain is termed 'illness behaviour'. Illness behaviour develops through cognitive processes (beliefs), coping strategies and psychological distress (anxiety, depression) (Waddell, 1999). Evidence shows that psychosocial factors ('yellow flags') play an integral part in illness behaviour more so than physical dysfunction (Kaapa et al., 2006; Dersh et al., 2006; Van Vuuren et al., 2006; Hagan et al., 2005; Van Vuuren et al., 2005; Lang et al., 2003; Khadilkar et al., 2003; Linton, 2000; Kendall et al., 1997). 'Yellow flags' can identify the "at risk" patients in the development of chronic pain and disability (Kaapa et al., 2006; Hagan et al., 2005; Lang et al., 2003; Khadilkar et al., 2003; Linton, 2000; Kendall et al., 1997).

Certain social settings/support can result in CLBP and disability. Family, work and the wider social networks influence beliefs, coping strategies and illness behaviour. Hence sizeable family and financial support can easily influence one to adopt certain attitudes and behaviour, encouraging the CLBP disorder and ultimately resulting in disability (Waddell, 1999).

In a nutshell the biopsychosocial model of chronic low back pain and disability comprises of: “pain; attitudes and beliefs; psychological distress; illness behaviour and social environment” (Waddell, 1999). The interaction of these factors contributes to the CLBP disorder and disability. (O’ Sullivan, 2005; Waddell, 1999; Lang et al., 2003).

The cause of CLBP is complex and multifactorial in nature. It needs to be considered within the ‘biopsychosocial framework’. For effective treatment of this disorder, the main driving mechanism of the pain must be identified.

2.5 Management of chronic low back pain

2.5.1 Medical (general)

Medical management of CLBP deals mainly with symptomatic relief. More aptly, it only focuses on pain relief. It does not address the source of the symptoms nor does it address the musculoskeletal impairments associated with chronic low back pain. Having reviewed the psychosocial aspects of CLBP, clinical depression is the only aspect that is dealt with in the medical management of CLBP, which is often a secondary outcome.

From the literature reviewed medical management of low back pain largely comprises of drug therapy. This may be in the form of oral medication or injection therapy [epidural/local/facet]. Frequently prescribed drugs used in the management of CLBP are analgesics, non-steroidal anti-inflammatory drugs (NSAIDs), muscle relaxants, antidepressants or corticosteroid/anaesthetic injections.

Lumbar corsets/ supports / braces are also commonly prescribed in the management of CLBP (Van Tulder and Koes, 2006; Koes et al., 2006; Waddell, 1999).

2.5.1.1 Analgesics

Conflicting evidence has been found with regard to the use of analgesics in the management of CLBP. Van Tulder and Koes (2006) in their review of randomised controlled trials found that opioids significantly reduced pain and improved functional status compared to a placebo. It was also found that a combination of opioids and paracetamol significantly reduced pain and improved function compared with a placebo at the three month follow-up.

In disparity, a systematic review conducted by Deshpande et al. (2007) found that the benefits of opioids in the management of CLBP were unclear due to the poor quality of randomised controlled trials (RCTs) reviewed. Waddell (1999) agrees that there is no conclusive evidence on the use of analgesics in the management of CLBP.

2.5.1.2 Non-steroidal anti-inflammatory drugs (NSAIDS)

Waddell (1999) reported that moderate evidence was found supporting the use of NSAIDS for short term pain relief in CLBP. Roelof et al. (2008) conducted a systematic review and agreed that NSAIDS effectively provided short term pain relief in patients with both chronic and acute LBP. Van Tulder and Koes (2006) also found that NSAIDS improved pain and function in the short term.

In a double- blinded placebo controlled study Birbara et al. (2003) found that NSAIDS produced significant pain relief as well as a reduction in associated disability one week after initiating treatment. A further reduction in pain and disability was seen at four weeks post intervention and this was maintained over three months.

2.5.1.3 Muscle Relaxants

In a systematic review Van Tulder et al. (2003) investigated whether muscle relaxants were effective in the treatment of non-specific low back pain. Muscle relaxants were found to be effective in the treatment of acute non-specific low back pain. Conflicting evidence was found with regard to CLBP.

Van Tulder and Koes (2006) stated that muscle relaxants may relieve pain but agreed that there is conflicting evidence on this with regards to CLBP. This agrees with Waddell (1999)'s statement that there is no conclusive evidence regarding the efficacy of muscle relaxants in the management of CLBP.

2.5.1.4 Anti-depressants

Waddell (1999) states that there is no conclusive evidence regarding the use of anti-depressants for pain management in CLBP, but goes on to say that anti-depressants in CLBP are useful if clinical depression is present.

In contrast, a systematic review by Van Tulder et al. (2006) found anti-depressants to be effective for pain relief in the short term. There was no evidence regarding their long term effectiveness for pain relief in CLBP. Similarly, Salerno et al. (2002)'s meta-analysis found anti-depressants to be effective in reducing pain intensity as compared to a placebo. No change was found with regard to improving function (activities of daily living). In a systematic review by Steiger et al. (2003) it was also found that anti-depressants resulted in moderate pain relief in patients with CLBP, which was independent of their depression status. They reported conflicting evidence regarding improvements in functional activities.

Van Tulder and Koes (2006) agree that antidepressants decrease pain in people with CLBP irrespective of whether depression is present or not. They also state that, its impact on function is uncertain.

2.5.1.5 Injection Therapy (epidural / facet / local)

Nelemans et al. (2006) conducted a systematic review to evaluate the effectiveness of injection therapy (corticosteroids or anaesthetics) in subjects with LBP lasting longer than one month. Twenty-one RCTs met the inclusion criteria. Only eight RCTs were of high quality and only three of these were well designed studies. Hence the authors concluded that due to the poor quality of the studies, the evidence was not convincing regarding the effectiveness of injection therapy for LBP.

Van Tulder and Koes (2006) reported that no significant difference was found between local injections (anaesthetics and corticosteroids) and placebo in short term pain relief in subjects with CLBP. Also no significant difference was found in pain relief and disability when facet joints were infiltrated with corticosteroid compared to the placebo at the one and three month follow up.

Waddell (1999) reported that epidural steroid injections gave better short-term pain relief when compared to the placebo for patients with nerve root pain. However no significant difference was found in patients with CLBP without nerve root pain. Also, in agreement with Van Tulder and Koes (2006), no significant difference was found between steroid injections and local anaesthetics. To add weight to this Koes et al. (2006) reported that there was no evidence supporting the use of steroid injection for CLBP.

2.5.1.6 Lumbar Corsets / supports / braces

There is no evidence supporting the effectiveness of lumbar corsets for pain relief in patients with CLBP (Koes et al., 2006; Van Tulder and Koes, 2006; Waddell, 1999). In a systematic review conducted by Van Duijvenbode et al. (2008), the use of lumbar supports for the prevention and treatment of low back pain was investigated. In the treatment of low back pain there was moderate evidence that lumbar supports were not more effective than no intervention for short-term pain relief and overall improvement in subjects with CLBP. With regard to return-to-work, there was conflicting evidence that patients using lumbar supports returned to work faster than those not using any support.

For the section on the prevention of low back pain, there was no difference between individuals who used lumbar supports and those who received no treatment or education on lifting techniques in back pain prevention and there was no corresponding reduction of sick leave. In individuals who attended back schools and were given lumbar supports, it was found that the use of lumbar supports reduced the number of sick days but did not assist in pain relief (Van Duijvenbode et al., 2008).

Individuals who used lumbar supports and received usual medical care, lumbar supports assisted in some pain relief and improved function but did not have a reduction in sick leave taken. The authors conclude that the results of this review warrants caution due to the low quality of the many studies that were reviewed.

In a nutshell, there is inconclusive evidence regarding the use of analgesics in CLBP; NSAIDS provide effective short term pain relief in CLBP; The evidence is inconclusive regarding the use of muscle

relaxants in CLBP; Antidepressants are effective with regard to pain relief in the short term;

There is no evidence supporting the use of Injection therapy or the efficacy of the use of lumbar supports in CLBP.

2.5.2 Physiotherapy Management of CLBP

Patients with chronic back pain are currently managed with various treatment modalities which lack scientific evidence regarding their efficacy (Koes et al., 2006; Khadilkar et al., 2005; Lang et al., 2003; Roland et al., 2000). Commonly used treatment modalities yielded from the literature search, as well as their efficacy, will be discussed in this section.

2.5.2.1 Spinal mobilisation and manipulation

In a systematic review conducted by Bronfort et al. (2004), the efficacy of spinal manipulative therapy/spinal manipulation and spinal mobilisation for low back pain and neck pain was reviewed. (The terms spinal manipulative therapy and spinal manipulation are used interchangeably in this review. Spinal manipulation/ spinal manipulative therapy is defined as “the application of high-velocity, low amplitude manual thrusts to the spinal joints slightly beyond the passive range of joint motion”. Spinal mobilisation is defined as “the application of manual force to the spinal joints within the passive range of joint motion that does not involve a thrust.”)

Moderate evidence was found that spinal manipulative therapy and spinal mobilisation was effective in the short-term for pain relief when compared with placebo and general practitioner care. It was also found to be effective for pain relief in the long term when compared to ‘physical therapy’. It was however not very informative because the treatment techniques/modalities used in ‘physical

therapy' were not described. The review also found moderate evidence that spinal manipulation and mobilisation was more effective in reducing disability in the long term when compared to 'physical therapy' and to a home exercise program.

Bronfort et al. (2004) however found that there is limited evidence to show that spinal manipulative therapy is better than 'physical therapy' and home back exercises in both the short and long term. They also found limited evidence to show that spinal manipulation is superior to "sham" spinal manipulative treatment in the short term. In a meta-analysis conducted by Assendelft et al. (2003), they concurred that there is no evidence to prove that spinal manipulative therapy is superior to other standard treatments (general practitioner care, physical therapy, exercises or back school) for patients with chronic low back pain. Similarly, in a systematic review by Avery and O'Driscoll (2004), it was found that the efficacy of spinal manipulative therapy for chronic as well as acute low back pain was unconvincing.

Mohseni-Bandpei et al. (2006) reported that their systematic review found that spinal manipulation did not clinically decrease pain significantly, nor did it produce any significant decrease in disability.

The efficacy of spinal manipulative therapy in the treatment of CLBP is unpersuasive. Many studies have found that spinal manipulation does not produce significant reductions in pain and disability.

2.5.2.2 Exercise Therapy

Goldby et al. (2006) conducted a RCT investigating the efficiency of musculoskeletal physiotherapy on chronic low back pain disorder. Patients were randomised to three groups: manual therapy group; spinal stabilisation group and a control group. This study thus concluded that spinal stabilisation was more effective than manual therapy at reducing pain, disability, dysfunction, medication intake and improvements in quality of life in patients with CLBP disorder. Another RCT by Aure et al. (2003) compared the effect of manual therapy (manipulation/mobilisation; general exercises and specific stabilisation exercises) to exercise therapy (general exercises) in subjects with CLBP. Their study found that the manual therapy group had significantly larger improvements than the exercise therapy group in all outcome measures throughout the experimental period which was maintained at the one year follow up. Although a much smaller sample was used in this RCT as compared to Goldby et al. (2006), Aure et al. (2003) demonstrated that a multimodal treatment approach which included manual therapy techniques as well as specific stabilisation exercises, general and stretching exercises is an effective approach in the treatment of CLBP disorder with long term benefits.

Geisser et al. (2005) also established that patients receiving manual therapy and customised exercises addressing their musculoskeletal dysfunction reported a significant reduction in pain. However, perceived disability did not change and Geisser and colleagues (2005) attribute this to the role of psychosocial aspects in disability.

In a systematic review conducted by van Tulder et al. (2000), it was discovered that exercise therapy used in the management of chronic low back pain increased subjects' return to normal activities of daily living and work (occupation). Improvements in pain intensity and function have been proven following the use of exercise therapy (Hayden et al., 2005).

A systematic review by Taylor et al. (2007) revealed high level evidence supporting the effectiveness of therapeutic exercises for chronic low back pain. Exercises reduced pain and improved activity in people with chronic low back pain. Strong evidence was also found that exercise reduced sick leave in people with CLBP. What also emerged from this study was that intensive individually assigned exercise programs, rather than standardised programs, proved to be more successful in subjects with CLBP.

A study by Staal et al. (2005) found evidence to prove that exercises decrease the recurrence rate of back pain in chronic as well as acute, subacute and recurrent back pain. Quite importantly they stated that no evidence was found where prescribed exercises, advice to stay active and resume work increased the risk of additional back pain or disability. In contrast to Taylor et al. (2007), in this review, randomised controlled trials (RCTS) were found which suggested that less intensive exercises were effective in reducing time off work in subjects with CLBP.

Ferreira et al. (2007) randomised 240 adults with non-specific low back pain to three groups: (i) general exercise (strengthening, stretching and aerobic exercise); (ii) motor control exercises (retraining of specific trunk muscles using ultrasound feedback); (iii) spinal manipulative therapy (spinal mobilization and manipulation).

This study concluded that motor control exercises and spinal manipulative therapy (SMT) had greater improvement than the general exercise group in the short term with regard to pain, disability, function and global perceived effect. There was negligible difference between the motor control group and spinal manipulative therapy group. In the long term there were similar results for all outcome measures in all three groups. However general exercises were found to be slightly less effective than SMT and motor control exercises.

In a systematic review, Ferreira et al. (2006) found that specific stabilisation exercises (SSE) were more effective in reducing pain and disability in CLBP, in both the short and medium term. Although, its effect on disability was more noticeable in the medium term as compared to the short term. SSE was found to be superior to “no treatment, usual care and education.” In spite of this, SSE did not appear to have any greater effect than SMT or conventional physiotherapy programs.

Rydeard et al. (2006) conducted a RCT with a pretest-posttest design investigating the effect of pilates exercises in subjects with non specific CLBP and functional disability. The results of this study proved that pilates exercises decreased low back pain and disability and this was maintained at the 12 month follow-up period compared to ‘usual care’. Although a small sample was used in this study, specific stabilisation exercises proved to have long term (12 months) benefits, and not only short and medium term effects, as revealed by Ferreira et al. (2006).

Low to moderate aerobic exercise (AE) was found to improve mood states (depression, anger and tension) and work status (return to work) in patients with subacute and chronic low back pain (Sculco et al., 2001). Although no noteworthy change was found in pain levels, at the 30 month follow-up, subjects who exercised for the majority of the time showed considerably fewer prescriptions for pain control and were given fewer physiotherapy referrals. These subjects also showed significant improvement with regard to return to work, compared to those who did not exercise much. The AE did not exacerbate symptoms or cause “new pain”. Chatzitheodorou et al. (2007), in a pilot study found that high intensity AE alleviated pain compared to low to moderate AE. However one needs to note the Chatzitheodorou (2007) study was only a pilot study while Sculco et al. (2001) did a full study.

In an award winning RCT study, Mannion et al. (1999), compared three types of active therapy for CLBP, namely modern active physiotherapy; muscle reconditioning on training devices and low impact aerobics. The study established that all three therapies were equally efficient in improving lumbar mobility, pain and disability, and psychosocial factors after treatment. With the exception of disability and fear-avoidance beliefs in the physiotherapy group (regressed to baseline), the aforesaid improvements were maintained at the six month follow-up stage. Range of movement of the lumbar spine improved in the ‘aerobics and devices’ groups. It is evidently seen that exercise alleviates negative effects of the psychosocial aspects that contribute to or initiate chronic pain.

Similarly in a RCT conducted by Moffet et al. (1999), it was found that general exercise classes (stretching, low impact aerobics, strengthening of the main muscle groups) and a brief education

session on back-care (cognitive behavioural approach) led by a physiotherapist, showed immense improvement in disability at both the six months and one year follow-up stage, compared to the control group (traditional general practitioner care). Significant improvement was also seen in pain intensity and sick days off work. The use of health care resources had also decreased. The authors imperatively state “people with back pain that use coping strategies that do not avoid movement and pain, have less disability”. Frederich et al. (2005) further confirms that a combined exercise and motivational program had significant long term effects with improvements in disability, pain intensity and working ability. These positive effects were still seen at the five year follow up stage.

From the literature reviewed it is clear that exercises are immensely beneficial in the management of CLBP. Even though the most effective type of exercise for the management of chronic low back pain has yet to be discovered, the positive effects of any type of exercise cannot be undermined. This has been clearly demonstrated in most studies which investigated exercise therapy as a treatment option in the management of CLBP.

2.5.2.3 Education

In a systematic review assessing the effectiveness of back schools for non specific LBP Heymans et al. (2004) found moderate evidence to support the efficacy of back schools in the short and intermediate term for pain and functional status compared to other conservative treatments. Conflicting evidence was found regarding the effectiveness of back schools compared with placebo or waiting list controls for pain, function or return to work (Heymans et al., 2004).

Moderate evidence was found supporting back schools in an occupational setting. This effectiveness was found in improvements on pain reduction, function and return to work in both the short and intermediate term compared to exercises, manipulation, myofascial therapy, advice, placebo or waiting list controls for patients with CLBP. This study reported generally low methodological quality and suggested future trials to improve methodological quality and clinical relevance.

Moseley et al. (2006) investigated the effect of neurophysiology education on cognitions, disability and performance in subjects with CLBP. In this blinded RCT, concealed allocation was used to randomise subjects to the experimental group (education on neurophysiology of pain) and control group (anatomy and physiology of the back). The experimental group showed a positive change in attitude and belief about back pain; a reduction in catastrophising and an improvement in physical performance compared to the control group. The largest change was seen in cognitions which were assessed using a revised survey of pain attitudes (SOPA) with an effect size of nine points. Subjects perceived themselves as less disabled, but the effect size was small (less than two). Their health care consumption decreased as well. Straight Leg Raise (SLR) and forward bending improved in the experimental group. This indicated a decrease in fear of movement as a result of cognitive changes that the education programme had on them (Moseley et al., 2006).

Moseley et al. (2006) conceded that their findings are consistent with other studies in that information alone is not sufficient to bring about a change in behaviour. They agree that neurophysiology education should be part of a multidisciplinary management

approach. As stated by de Jong et al. (2005), education alone is not effective in bringing about a change in self perceived disability (SPD) in subjects with CLBP.

In de Jong et al. (2005) 's replicated single case experimental design, they examined the effect of education and graded exposure (A) versus education and graded activity (B) as a mediator for fear reduction and associated disability and physical activity. In both treatment groups it was found that the education session alone resulted in significant short term effects in decreasing fear of movement /re-injury; pain catastrophising and fear of pain – education thus resulted in a 'change of beliefs'. Further reduction occurred in fear of movement/ re-injury; pain catastrophising and fear of pain after exposure in vivo (A) occurred, but not with the graded activity program (B). Rather unexpectedly it was found that group (A) had a significant decrease in pain intensity at the six month follow –up when compared to baseline. All improvements were maintained in group (A) at the six month follow up. SPD decreased once patients received the graded exposure in vivo (A). This study established that change in 'attitude and beliefs' occurred after 'education' and change in 'behaviour' occurred after 'exposure in vivo'. Although this study was a single-case experimental study (level III evidence) rather than a recognised level II RCT, it showed that the value of education cannot be undermined as part of a MDR program. It also shows that education is an effective intervention tool at primary care level if the "at –risk" (yellow flags) patients can be identified.

A RCT by Heymans et al. (2006) assessed the effectiveness of high intensity back schools versus low intensity back schools in an occupational setting in subjects with non-specific chronic low back pain. This high quality trial randomised two hundred and ninety-nine subjects to high intensity back school, low intensity back school and usual care. It was found that the low intensity back school was most effective regarding return to work compared to usual care and high intensity back school. Functional status and kinesiophobia improved at the three month follow-up. At the six month follow up the low intensity group had a higher perceived recovery compared to usual care and the high intensity group.

Education is a powerful tool in the rehabilitation process of the CLBP disorder. Even though the evidence shows that education is only effective in the short term with regard to pain relief, return to work and function in general, the power of education cannot be undermined. This is demonstrated in the evidence whereby education has the ability to change attitudes, beliefs and behaviour. This ability to change attitudes, beliefs and behaviour is integral in the management of chronic pain and is a catalyst to a positive rehabilitation process.

2.5.2.4 Electrotherapy

Khadilkar et al. (2005) conducted a SR to determine the effectiveness of transcutaneous electrical nerve stimulation (TENS) in the management of CLBP. The secondary aim was to determine the most effective method of administering TENS for CLBP. The results of this review were conflicting and inconclusive for both the primary and secondary aims of this review. These trials differed significantly in terms of the study design, methodological quality,

sample size, study population, stimulation mode, method of TENS application, treatment duration, and concurrent interventions. They were unable to do a meta-analysis due to the heterogeneity between the studies. Hence these differences contributed to the inconsistent outcomes. They further reported that their findings are consistent with previous systematic reviews that were conducted. They concluded that larger, high quality RCT's need to be conducted to determine the efficacy and treatment parameters of TENS in the management of CLBP.

Clarke et al. (2007) conducted a SR to determine the effectiveness of traction in the management of LBP. Again the authors reported that due to the lack of high quality studies there was no conclusive evidence regarding the efficacy of traction in the management of LBP of different durations (acute, subacute and chronic).

In a prospective RCT of spinal manipulation and ultrasound in the treatment of CLBP, subjects were randomised to ultrasound/exercise and manipulation/exercise. Both groups showed significant improvements in all outcome measures in both the short and long term. The between group analysis proved that the manipulation/exercise group demonstrated greater benefit compared to the ultrasound/exercise group. Thus in both the short and long term the manipulation/exercise group demonstrated superior statistically significant results compared to ultrasound/exercise group (Mohseni-Bandpei et al., 2006).

In a randomised placebo controlled study the effect of continuous ultrasound (US) was evaluated in patients with non-specific low back pain. The US as well as the placebo group showed statistically significant improvement in function after five treatments.

This effect was short-lived in the placebo group, but the US group showed statistically significant improvement in both function and lumbar range of movement at the end of the intervention (Ansari et al., 2006). There was no long term follow-up; hence the effect of US in the long-term cannot be concluded. The small sample size in this study thus questions the internal validity of the study.

The analgesic effect of interferential therapy (IF) and TENS were compared in a RCT by Shanahan et al. (2006). It was found that TENS was more effective than IF for the treatment of pain.

In a double-blinded RCT interferential (IF) and horizontal therapies (HT) were compared in the treatment of chronic low back pain. IF and HT was effective in alleviating both pain and disability in patients with CLBP, with continued improvement at week fourteen. The use of analgesics had also decreased in the two active treatment groups when compared with the control group and baseline measurements (Zambito et al., 2006)

Yousefi-Nooraie et al. (2007) conducted a systematic review to assess the effects of low level laser therapy (LLLT) in subjects with non-specific low back pain. Their search established that there was insufficient data as only six studies were of reasonable quality. Thus no firm conclusions could be drawn regarding the effectiveness of LLLT in the management of non-specific low back pain. These authors attribute these inconclusive results to the poor methodological quality of the studies.

The effect of electrotherapy in subjects with CLBP remains unpersuasive. Systematic reviews assessing the efficacy of TENS, LLLT and traction in the treatment of CLBP remain inconclusive

due to the poor methodological quality of the studies reviewed. Interferential therapy was found to be effective in alleviating pain, disability and analgesic consumption in the long term. However when TENS was compared to IF therapy, TENS was found to be more effective with regard to pain relief. The use of US for CLBP appears beneficial in the short term, but is not superior to manipulative therapy and does not prove to be more beneficial in the long term.

2.5.3 Psychosocial Management

Psychosocial aspects have been implicated as contributing toward the chronicity of pain and disability (Kaapa et al., 2006; Hagan et al., 2005; Lang et al., 2003; Khadilkar et al., 2003; Kendall et al., 1997). Koes et al. (2006) identified the following risk factors as leading to this chronicity: individual aspects (obesity, low educational level, high levels of pain and disability); psychosocial (distress, depressive mood, somatisation); and occupational (job satisfaction, unavailability of light duty on return to work, job requirement of lifting for more than three quarters of the day).

In a systematic review by Linton (2000) high level of evidence was found implicating psychosocial factors in the development of chronic pain and disability. Four prominent psychological factors emerged from this review: cognitive factors (attitudes and beliefs, especially fear avoidance and catastrophising), emotional factors (depression, anxiety and distress), social aspects (family and work issues) and behavioural components (passive coping strategies- "illness behaviour" and poor self perception). This review further highlights that psychosocial aspects need to be addressed in the management of back pain/CLBP to prevent chronicity and disability respectively.

Thus as a result psychosocial factors in back pain, “yellow flags” have been developed for the identification of patients at risk of developing chronic pain and disability. (Koes et al., 2006; Waddell, 1999; Kendall et al., 1997). ‘Yellow flags’ are defined as “factors that may increase the risk of development of long term disability and work loss associated with low back pain”. Waddell (1999) asserts that “non medical and psychosocial factors are stronger predictors of chronic pain and disability than any biomedical information”. The assessment of “yellow flags include: Attitudes and beliefs about back pain; behaviour; compensation issues; diagnosis and treatment; emotions; family and work” (Waddell, 1999). For this reason, the need for cognitive-behavioural therapy in the management of chronic low back pain is significant.

Vlaeyen et al. (2005) in their review of “Cognitive-behavioural treatments for chronic pain: what works for whom?” found that there are a substantial number of patients with chronic low back pain that do not appear to benefit from available treatment interventions. They revealed that it is “well established” that cognitive-behavioural treatments are “effective in reducing the enormous suffering that patients with chronic pain have to bear.” They substantiate that cognitive-behavioural treatment is effective for chronic pain and is an area open to extensive exploration and improvement.

The contribution of cognitive-behavioural therapy (CBT) in the management of chronic low back pain was looked at by de Jong et al. (2005). They examined the effect of education and graded exposure with behavioural experiments versus an operant graded activity program in the reduction of pain related fear and associated disability and physical activity. The main findings suggest that patients with chronic low back pain with substantial pain-related fear need treatment programs that are tailored to their specific attitudes. It was found that education produced

considerable short-term decrease in fear of movement or (re)injury, pain catastrophising and fear of pain but the self reported difficulties in activities of daily living remained unchanged. This variable only changed when the subjects received graded exposure in “vivo”. This shows that the power of education cannot be underestimated and is effective in reducing fears, but more is required to affect a change in pain behaviour. This study confirms that exposure to “fear-eliciting activities” in treatment is integral in bringing about a change in attitudes and behaviour toward pain. The results of this study were maintained in patients receiving the “exposure in vivo” at the six month follow-up. These patients also reported a significant decrease in pain intensity.

A study by Dersch et al. (2006) ascertained the importance of identifying the psychosocial risk factors in patients that may lead to chronic pain. They felt that the management of patients with chronic pain should follow a “biopsychosocial” approach – the dynamic interaction of the biologic, psychological and social factors.

Elements of the “biopsychosocial model” include the physical dysfunction (bio), the psychological aspects (beliefs, coping, distress, and illness behaviour) and social interactions (family, at work and wider social networks) (Waddell, 1999)

In their systematic review, Ostelo et al. (2005) could not detect any significant differences between behavioural therapy and exercise therapy with regard to pain intensity. They also did not find any significant difference between long and short term effectiveness when behavioural components were added to “usual” treatment programs (physiotherapy, back education or various forms of medical treatment), with regard to pain. They attributed this to the poor quality of studies and thus the conclusions of these studies necessitated vigilance. They highlighted that an important

aspect of CBT that one should not lose sight of is that the aim of such treatment is not to treat pain, but to modify cognition, behaviour and “physiological reactivity.”

The evidence reveals that the impact of the psychosocial aspects, as well as in the development of chronic pain is colossal. Cognition and behaviour are vital aspects that are easily overlooked in the management of chronic low back pain. Psychosocial aspects or ‘yellow flags’ must be identified and addressed from the onset of treatment. Early identification of these ‘yellow flags’ is crucial in preventing the development of chronicity and disability in the encumbering individual in society. Hence cognitive-behavioural therapy is an important adjunct in the management of CLBP. A healthy mind and healthy body are synonymous.

2.5.4 Multidisciplinary Rehabilitation (MDR)

Guzman et al. (2007) conducted a systematic review to assess the effect of multidisciplinary bio-psycho-social rehabilitation (MDR) on pain, function, employment, quality of life and global assessment outcomes in patients with chronic disabling LBP. The results of the systematic review yielded strong evidence that intensive (>100 hours) MDR with a functional restoration approach improved function when compared with inpatient or outpatient non-MDR. Moderate evidence was found to show that intensive MDR with a functional restoration approach improved pain when compared with outpatient non-MDR or ‘usual care’.

In Guzman et al. (2007) ‘s study, there was contradictory evidence regarding the effect of intensive MDR on vocational outcomes There were trials that showed improvement in return-to-work while others showed no significant reduction in sickness absence and consequently a statically significant outcome could not be determined. The study showed that less

intensive MDR programs with a functional restoration approach did not show improvements in pain and function. No conclusions could be drawn regarding quality of life and global assessment outcomes as most trials did not evaluate these outcome measures.

Lang et al. (2003) agreed that intensive MDR with a functional restoration approach showed improvements in pain and function in subjects with CLBP. They conducted an experimental non-RCT study comparing the effects of MDR with 'usual care' (treatment by a physician and physiotherapist – non surgical and non MDR treatment). The results of this study concluded that that intensive MDR with a functional restoration approach showed improvements in both the physical and mental sectors more so than 'usual care'. Work absenteeism was significantly reduced in the MDR group as compared to 'usual care'. In general the MDR group (54%) had appreciably better outcomes than 'usual care' (24%), although pain intensity, pain related functional disability and depression scores did not differ significantly between the two groups. Although this is a study of sound methodological quality, the internal validity of the MDR group is questionable due to the small sample size. Hence the results of this study need to be validated using a RCT; a fact alluded to by the authors.

In direct contrast, a systematic review by Van Geen et al. (2007) found that MDR was only effective with regard to work participation and the quality of life and there was no effect with regard to pain intensity and functional status. Furthermore, the intensity of the intervention had no sizeable impact on the effectiveness of the intervention.

Kaapa et al. (2006) conducted a RCT to evaluate the effectiveness of a low- cost semi-intensive (70 hours) multidisciplinary rehabilitation (MDR) compared with individual physiotherapy (IP). In this study both treatment interventions showed statistically significant improvements in the main outcome measures-(LBP intensity; sciatic pain intensity; back specific

disability; subjective working capacity; sick leave due to back pain; beliefs of working ability after two years and symptoms of depression) with no statistically significant differences between the two. The effects of the interventions were maintained at the twenty-four month follow-up assessment. The only difference between the two was that in the MDR group, general well-being was statistically better just after rehabilitation and health care consumption decreased more in the MDR group than in the IP group. This study is in keeping with the findings by Van Geen et al. (2007) and they are in contrast with the findings by Guzman et al. (2007) and Lang et al. (2003) whereby only high intensity (>100 hours) MDR programs yield statistically significant changes in main outcome measures.

The evidence regarding the effectiveness of MDR programmes is inconsistent. There is contradictory evidence regarding the intensity of the programme as well as improvements in key outcome measures (return to work/work absenteeism, function and pain intensity) as demonstrated above. Even though the evidence is incoherent, one can conclude that a well constructed program addressing the bio-psycho-social aspects of CLBP can produce favourable results with long term effectiveness.

O' Sullivan (2005) states that the management of CLBP needs to be based on a biosychosocial model and not a biomedical model. He further states that CLBP can be subdivided into various groups by identifying the "driving mechanism" of the chronic pain disorder. He proposes three broad subgroups:

- 1) A pathological process being the dominant pain driving mechanism
- 2) Psychosocial factors being the main underlying mechanism of the chronic pain disorder

3) Physical or mechanical factors as the predominant factor in the chronic pain syndrome/disorder. This subgroup can be further divided as the problem being due to “movement impairment” or “control impairment” (altered motor control). “Movement impairment” is characterised by fear-avoidance behaviour and results in loss of active or passive physiologic movement in one or more directions.

“Control impairment is characterised by pain provocation behaviour and results in loss of functional control around the neutral zone of the spinal motion segment. This being due to underperformance of the spinal stabilisation muscles or increased spinal loading (muscle guarding).

O’ Sullivan (2005) stresses that for the successful management of the CLBP disorder, the main “driving mechanism” of the pain must be identified. He believes that “physiotherapy interventions that are classification based and specifically directed to the underlying driving mechanism, have the potential to alter these disorders and impact on both the primary and secondary cognitive drivers of pain”.

2.6 Importance of using evidence when managing low back pain (or when choosing a treatment modality for low back pain)

“Evidence-based practice (EBP) is an approach to health care wherein health professionals use the best evidence possible, i.e. the most appropriate information available, to make clinical decisions for individual patients.” (McKibbin, 1998). It is also defined by Sackett et al (1996) as “conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients” (Greenhalgh, 2006;)

The review of literature clearly portrays the high incidence of LBP world-wide; the current astronomical and rising costs that government and society is faced with; as well as loss of function and disability an individual is faced with, and this undoubtedly necessitates the need for evidence based management to be employed with regard to LBP and hence CLBP (Staal et al., 2005; van Tulder et al., 2006; Dagenais et al., 2008).

In Dagenais et al (2008)'s review it was found that the largest proportion of direct medical costs for low back pain was spent on physiotherapy. This international study has provided evidence on the huge costs involved in the management of low back pain. Thus the importance of employing evidence based practice in the management of low back pain not only ensures that the patient receives the best and unsurpassed care available but will also aid in reducing the exorbitant costs involved in the management of low back pain and therefore CLBP.

Byrne et al. (2005) states that there is evidence to prove that employing evidence based management in acute low back pain patients, significantly reduces pain, chronicity as well as costs, compared to usual medical care. There is increasing evidence from meta-analysis proving that rehabilitation which involves exercise therapy is the most effective in reducing disability and the recurrence of LBP (Louw et al., 2007).

EBP is important in providing efficient health care. With evidence-based care research findings are used as a basis in clinical decision making. EBP helps optimise current health care and enables practitioners to be accountable for the interventions that they use (Stevenson et al, 2006).

EBP is important as scientific evidence is required in policy-making, dispute resolution and law, as well as in clinical care. Hence EBP uses pertinent information obtained from research findings in clinical, management and policy arenas (Manchikanti, 2008).

EBP is also important in order to improve the quality and appropriateness of patient care, treatment outcomes, the efficiency and effectiveness of the medical practitioner and to improve costs involved in the management of the patient (Manchikanti, 2008). Resources are often overstretched in health care due to advances in technology, changing demographics and escalating health costs, therefore “policy makers and purchasers” require health care providers to provide evidence of efficacy of treatment, warranting the astronomical costs (Bithell, 2000). Bithell (2000) states that evidence based practice will demonstrate that treatments are effective and well supported by research thus warranting costs and implementation.

EBP is important because it represents a shift away from the traditional practice based on clinical experience and knowledge of authorities toward substantiated data (Bithell, 2000). EBP has the ability to prove what is actually true from what is believed to be true. Also, Information regarding best practice/treatment is continually evolving, hence information becomes outdated and thus it is imperative to stay updated (Research Committee of the Australian Physiotherapy Association and invited contributors, 1999).

Koes et al. (2006) provide guidelines based on current available evidence regarding the management of CLBP. The most recommended treatment modalities in the management of CLBP are: cognitive and behavioural therapy; supervised exercise therapy; a brief education intervention; multidisciplinary rehabilitation based on the biopsychosocial

model; short term use of NSAIDs and weak opioids. They further state that back schools, short course of spinal manipulation and mobilisation, noradrenergic or noradrenergic-serotonergic anti-depressants, muscle relaxants and capsicum plasters can be considered in the management of CLBP. They do not recommend passive treatments, for example, ultrasound and short wave therapy, and invasive treatments (gabapentin).

2.7 Review of Methodology

The use of self-administered questionnaires for a survey study is the cheapest or most economical and can be conducted by a single researcher. Data can be gathered from a large sample in a wide geographical area in a short space of time. Respondents are able to complete the questionnaire when it is convenient for them. They are able to take their time to think about the answers and consult records for specific information. A standardised mail questionnaire avoids interviewer bias. Questionnaires provide anonymity encouraging honest responses (Portney and Watkins, 2000).

However this method also has some disadvantages. A major disadvantage of this type of survey is that the return rate is often low. A realistic return rate lies between 30% and 60% for most studies. A mail questionnaire also limits the types of questions that a researcher can use for data collection. The researcher cannot control the conditions under which the questionnaire is completed, for example completing the questionnaire during a drinking party, can lead to collaboration of answers, dishonest answers or drivelled answers. Questions cannot be clarified or probed as the researcher is not present resulting in unanswered questions; incomplete questionnaires can reduce the

amount of valid questionnaires, hence affecting the outcome of the study (Portney and Watkins, 2000).

Someone other than the sampled respondent may end up completing the questionnaire, resulting in fictitious data. Reactions to questions cannot be visually observed; a useful tool in detecting honesty in responses (Portney and Watkins, 2000).

The researcher chose the mail survey questionnaire as it enabled coverage of a wide geographical area thus aiding the validity of the results. The information required in this study met the requirements necessary for the use of a self –administered questionnaire. This methodology also complied with the budget of a single researcher.

2.8 Conclusion

This review has demonstrated that the prevalence of LBP is unequivocally high both in the developed and developing countries. The cause of CLBP is multifactorial and must be considered within a bio-psycho-social frame. Medical management for CLBP is questionable as no conclusive evidence can be determined for most of the common drugs prescribed. The only drugs that proved efficacious in the short term for pain relief were NSAIDS and antidepressants.

The evidence for physiotherapy management is clear: spinal manipulative therapy is unpersuasive in the management of CLBP; exercise therapy remains indisputably the most effective management strategy for CLBP; electrotherapy is largely not credible; the psychosocial aspects of LBP are vital predictors of chronicity. Early identification of these aspects,

and the inclusion of cognitive-behavioural therapy in the management of CLBP is crucial to the successful treatment of this condition; the evidence is incoherent with regard to MDR programmes in the management of CLBP.

3.0 METHODOLOGY

3.1 Study Design:

This was a quantitative descriptive cross sectional study using a self-administered questionnaire.

3.2 Subjects:

3.2.1 Source of Subjects

The subjects in this study were registered Physiotherapists in KZN, working in both the public and private sector.

3.2.2 Study Population and Sample Size:

There were 685 KZN physiotherapists registered with the HPCSA in August 2007 (when the study was started). All of these physiotherapists were included in the study. It was hoped that the large sample size would aid the validity of this study.

3.2.2.1 Inclusion Criteria:

The subjects for the study were:

- All practicing physiotherapists in KZN registered with the Health Professions Council of South Africa involved in the management of chronic low back pain.

3.2.2.2 Exclusion Criteria:

The following were excluded from the study:

- Non-practicing physiotherapists
- Physiotherapy assistants
- Physiotherapists not working within the KZN province
- Practicing physiotherapists not involved in the management of CLBP

3.3 Instrumentation and Outcome Measures

A self designed questionnaire was developed for this study. The questionnaire was developed with the aid of current literature. The questionnaire contained the following sections (See appendix A for outline of the questionnaire).

Section A

This section of the questionnaire requested information on age; gender; qualification(s) obtained; institution from where the qualification was obtained; the number of years qualified as a physiotherapist; the type and area of work that the physiotherapist is involved in and affiliations to professional bodies.

Section B

This section petitioned information on chronic low back pain (CLBP) disorder; the management of patients presenting with CLBP disorder; statistics regarding the number of CLBP patients treated and information on post graduate courses relating to the management of CLBP disorder.

Section C

Section C inquired information regarding journal articles, that is, the number of journal articles read; the source of the articles; the ability to critique articles and the recognition of various levels of evidence.

3.3.1 Content Validity of the Questionnaire

A group of experts (academic and clinical experts) involved with the management of CLBP was consulted to validate the content of the questionnaire. The clinical experts consulted (three), have been qualified for more than twenty years. Two of the experts have master's degree in physiotherapy and one has a bachelor's degree in physiotherapy. They were all lecturers in the Orthopaedic Manipulative Therapy (OMT) course and are key leaders in this course. These experts have written and presented papers at international physiotherapy congresses and have

presented courses both nationally and internationally. Two of the experts are honorary lecturers at the University of the Witwatersrand as well as honorary life members of the OMT group.

Five academic experts were consulted to validate the questionnaire. They were all lecturers at the University of the Witwatersrand (WITS). The qualifications of these experts included a master's degree in physiotherapy, a doctorate in physiotherapy and an associate professor.

The clinical and academic experts were consulted separately. The questionnaire with the aims and objectives of the study were emailed to the experts ahead of the scheduled meetings, such that the researcher could be consulted to provide clarification or explanation regarding the content of the questionnaire. The clinical and academic experts held separate meetings where each question in the questionnaire was validated against the aims and objectives of the study. Essential questions were added, non-valid and redundant questions were removed; questions were rephrased or made more 'user friendly' where necessary and questions were relocated to the most appropriate sections as felt necessary by the academic and clinical experts. After the validation process, the necessary corrections were done and the "final" questionnaire was forwarded to the research supervisors for approval before the pilot study commenced.

3.3.2 Reliability of the Questionnaire

The intra-rater reliability of the questionnaire was established using the test-retest method by conducting a pilot study. This was done by administering the same questionnaire four days after the initial administration. The test-retest procedure is usually done four to seven days after the initial administration. This avoids the 'recall factor' and

ensures sufficient time for the participants to still be aware of the research process.

3.4 Procedure

3.4.1 Pilot Study

A Pilot Study was conducted in KZN to establish:

- the intra-rater reliability of the questionnaire
- the amount of time it took to complete the questionnaire
- if any ambiguity existed in the questions

3.4.1.1 Methodology of the pilot study

A sample group of 10 physiotherapists was asked to fill in the questionnaire. The physiotherapists were contacted individually or in groups of three. They were asked to complete the questionnaire recording the amount of time it took to complete the questionnaire, and mark the questions that they did not understand, found confusing or ambiguous. The questionnaires were collected two days later with comments and the amount of time it took to complete. Four days thereafter the questionnaire was re-submitted to the sample in the pilot study to assess the intra-rater reliability of the questionnaire. The same comments as stated below were cited. The physiotherapists in the pilot study were not included in the main study

3.4.1.2 Results of the pilot study

The main complaint from all the physiotherapists was that the questionnaire took too much of their time to complete. It took them between 22 and 30 minutes to complete the questionnaire. All of them found question 20 cumbersome, which took up too many pages creating a lengthy questionnaire. One physiotherapist also found it confusing. There

were questions regarding patient statistics and post-graduate courses which created ambiguity/confusion. The only other remarks were that some had no idea regarding the question on the yellow flags; article critique and the level of evidence that exists.

In response to these concerns, question 20 was refined to one and a quarter pages, from four pages. The questions that created confusion or ambiguity were removed and rephrased respectively. The final questionnaire was then forwarded to the research supervisors for approval before dispatching it to the KZN physiotherapists.

3.4.1.3 Implications of the pilot study results on the data collection process

Very importantly, the main outcome of the pilot study was 'the amount of time it took to complete the questionnaire'. This integer could directly affect the return rate of the completed questionnaires, which in turn would affect the validity of the study hence the findings of this pilot study prompted the researcher to amend the necessary questions in an endeavor to ensure a good return rate of the questionnaire and make 'indisputable' results possible.

3.4.2 Main Study

The sample in this study (registered physiotherapists in KZN) was obtained from the Health Professions Council of South Africa. The questionnaire and information sheet were both posted and emailed to the subjects. Self addressed, stamped envelopes were included for the return of the questionnaire. Reminder letters and emails were sent a week thereafter. Due to the poor response rate from the emailed questionnaires, the questionnaire was also posted to the 'email sample' group.

Reminder letters were sent a week after postage of the letters. The responses in the questionnaire were coded. The coded responses were captured on an excel spread sheet.

3.5 Ethical Considerations

- Ethical clearance was granted by the Witwatersrand University Human Research Ethics Committee (clearance number: M070908, see appendix B).
- No form of identification was required on the questionnaire to ensure the anonymity of the participants.
- Filling out of the questionnaire was considered as consenting to participation in the study.
- All identifying data was kept separate from the questionnaires and in a safe place.

3.6 Data analysis

Characteristics of this study were expressed as frequencies, percentages and means and 95% confidence intervals were used. The data was illustrated using graphs and tables. Pearson's chi-square test was used to determine if any relationship existed between demographic information, information regarding post qualification courses and the physiotherapy modalities used in the management of low back pain. The log-linear model and/or logistic regression were employed to perform multivariate analyses

CHAPTER 4

4.0 RESULTS

4.1 Introduction to the results

The results of this study were presented as frequencies and percentages. Tables and graphs were used to illustrate the data where applicable. The Pearson's chi-square test was used to show if any association existed between the variables that were tested at the 95% confidence interval.

Please note that some of the cumulative percentages in the tables and graphs below do not total to a hundred percent, it is due to the non-response of the study sample to the information that was requested for that particular section. Hence the variances in "N" that are seen in the tables and graphs.

4.2 Sample Size

From a total of six hundred and eighty-five (685) questionnaires that were distributed, two hundred and thirteen (31.1%) were returned.

One hundred and forty-one (20.6%) met the inclusion criteria and thus were deemed valid while seventy-two (10.5%) were non-valid and hence were excluded from the study, that is respondents that were not involved in the management of patients with CLBP; non-practicing physiotherapists and those that failed to complete the questionnaire.

4.3 Demographic Information

The descriptive results for the demographic information are shown in Table 4.1 below, specifically the distribution of the sample, that is, age; gender; the institution participants qualified at and the number of years post qualification.

Table 4.1: The demographic distribution of the study sample (N = 141)

	Number	Percentage (%)
<i>Age Group:</i>		
20 -30 yrs	69	49
31 – 40 yrs	25	18
41 -50 yrs	31	22
51 -60+ yrs	16	11
<i>Gender:</i>		
Male	22	16
Female	119	84
<i>Institution qualified at:</i>		
UCT	21	15
WITS	14	10
UP	14	10
MEDUNSA	1	1
UWC	4	2
UOFS	5	4
Stellenbosch	11	8
UKZN	61	43
Other	10	7
<i>Years Post Qualification:</i>		
< 3yrs	10	7
3 -5 yrs	60	43
6-10 yrs	62	44
> 10 yrs	9	6

The above table demonstrates that a good number of the study sample were females (84%), aged between 20–30 years (49%). The majority of the study sample had post qualification experiences of between 3 and 10 years (87%). Forty-three percent of the study sample graduated from the University of Kwazulu-Natal.

Table 4.2 below shows the employment distribution of the study sample.

Table 4.2: Employment distribution of the study sample (N = 141)

Employment	Number	Percentage (%)
Private practice	92	65
State employed	26	18
Private & State employed	17	12
Academic Institution	2	1
Private & academic	2	1

The table above indicates that 65% of the study sample was employed in private practices.

Figure 4.1 below indicates the type of work that the study sample was engaged in.

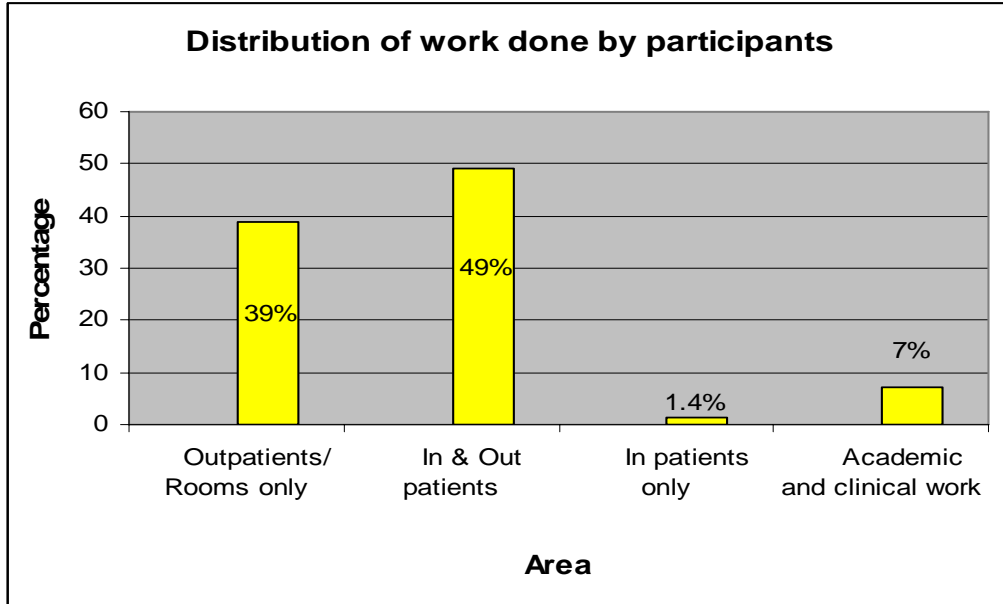


Figure 4.1: Distribution of work done by the participants (N = 141)

A large number (49%) of the study sample treated both *in* (hospital) and *out* patients.

4.4 Chronic Low Back Pain: Patients Treated and Treatment Modalities

This section gives results regarding patient statistics, courses done, information regarding CLBP and treatment modalities used in the management of CLBP.

4.4.1 Number of patients with CLBP treated per month

Table 4.3 below indicates the number of patients with CLBP that were treated per month.

Table 4.3: The number of CLBP patients treated per month (N= 141)

No. of CLBP patients	Number	Percentage (%)
1 - 5	30	21
6 - 10	32	23
11 - 20	39	28
>20	35	25

Twenty eight percent of the study sample treated between 11 and 20 patients with CLBP per month, followed closely by 25% of the sample who treated more than 20 patients per month.

4.4.2 Commonly used treatment modalities for CLBP

The most commonly used physiotherapy modalities in the management of CLBP are shown in Figure 4.2 below.

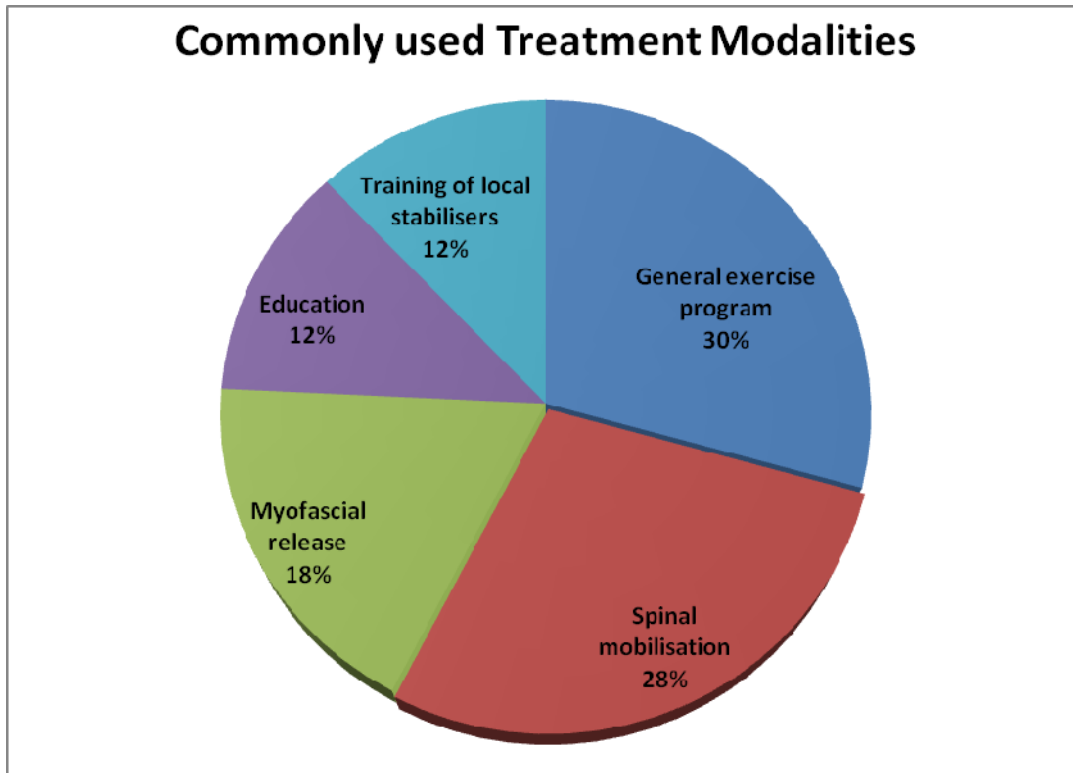


Figure 4.2: Commonly used treatment modalities

A general exercise program (30%) and spinal mobilisation (28%) were the most commonly used physiotherapy treatment modalities for CLBP.

The study sample was asked to prioritize the three most significant treatment modalities used in the management of CLBP. This is illustrated by Tables 4.4, 4.5 and 4.6 respectively. The choices of treatment modalities were individually analysed to obtain the study samples first, second and third choice. Coincidentally the first and second prioritised treatment modality happened to be the same modality.

Table 4.4: First Prioritised Modality (N=128)

Modality	Number	Percentage (%)
<i>Massage</i>	7	5
<i>Myofascial Release</i>	17	12
<i>Spinal mobilisation</i>	40	28
<i>Dry Needling</i>	1	0.7
<i>Interferential Therapy</i>	2	1
<i>Ultrasound therapy</i>	1	1
<i>Short-wave therapy</i>	1	1
<i>Cognitive & Behavioural Therapy</i>	5	4
<i>Ergonomics/Kinetic Handling</i>	5	4
<i>Education</i>	17	12
<i>Training local stabilisers</i>	12	9
<i>Motor control exercises</i>	3	2
<i>General Exercises</i>	7	5
<i>Stretching Exercises</i>	1	1
<i>Heat / Ice / strapping</i>	9	6
<i>None-response</i>	13	9

The most important modality used in the management of CLBP was ***spinal mobilisation (28%)***.

Table 4.5: Second Prioritised Modality (N=131)

Modality	Number	Percentage (%)
<i>Massage</i>	4	3
<i>Myofascial Release</i>	25	18
<i>Neural tissue mobilisation</i>	4	3
<i>Spinal mobilisation</i>	31	22
<i>Traction</i>	3	2
<i>Dry Needling</i>	5	4
<i>Interferential Therapy</i>	3	2
<i>Ultrasound therapy</i>	2	1
<i>Cognitive & Behavioural Therapy</i>	3	2
<i>Ergonomics/Kinetic Handling</i>	8	4
<i>Education</i>	5	4
<i>Training local stabilisers</i>	14	10
<i>Motor control exercises</i>	3	2
<i>General Exercises</i>	12	9
<i>Stretching Exercises</i>	4	3
<i>Heat / Ice / strapping</i>	5	4
<i>None-response</i>	10	7

The second most important modality in the management of CLBP as indicated by the study sample was again ***spinal mobilisation (22%)***.

Table 4.6: Third Prioritised Modality (N=129)

Modality	Number	Percentage (%)
<i>Massage</i>	4	3
<i>Myofascial Release</i>	19	14
<i>Neural tissue mobilisation</i>	3	2
<i>Spinal mobilisation</i>	13	9
<i>Traction</i>	1	1
<i>Interferential Therapy</i>	6	4
<i>Ultrasound therapy</i>	3	2
<i>Short-wave Therapy</i>	1	1
<i>Cognitive & Behavioural Therapy</i>	4	3
<i>Ergonomics/Kinetic Handling</i>	12	9
<i>Education</i>	2	1
<i>Training local stabilisers</i>	17	12
<i>Motor control exercises</i>	2	1
<i>General Exercises</i>	29	21
<i>Stretching Exercises</i>	4	3
<i>Heat / Ice / strapping</i>	9	7
<i>None-response</i>	12	9

The third modality as prioritised by the study sample in the management of CLBP was **general exercises (21%)**

4.4.3 Reasons for selection of treatment modalities

Table 4.7 below demonstrates the reasons cited for the chosen modality in the management of CLBP.

Table 4.7: The most frequently selected **Reasons** for the chosen modalities
(N=141)

Modality	Reason	Number	Percentage (%)
<i>Spinal mobilisation</i>	Undergraduate education	65	46
	Clinical experience proves effectiveness of the modality	25	18
	Pathophysiological basis	13	9
	Postgraduate courses / Physiotherapy conferences	12	8.5
<i>General Exercise Program</i>	Undergraduate education	42	30
	Clinical experience proves effectiveness of the modality	22	16
	Motivates the patient	10	7
	Postgraduate courses / Physiotherapy conferences	8	6
<i>Myofascial release</i>	Undergraduate education	35	25
	Clinical experience proves effectiveness of the modality	35	25
	Postgraduate courses / Physiotherapy conferences	29	21
	Pathophysiological basis	21	15
<i>Education</i>	Undergraduate education	49	35
	Motivates the patient	29	21
	Clinical experience proves effectiveness of the modality	17	12
	Postgraduate courses / Physiotherapy conferences	16	11
<i>Training local stabilisers</i>	Undergraduate education	38	27
	Postgraduate courses / Physiotherapy conferences	26	18
	Clinical experience proves effectiveness of the modality	23	16
	Evidenced based literature	15	11

From the table above it is clearly demonstrated that modalities were chosen mainly due to undergraduate education and clinical experience.

Table 4.8 below shows various age groups of the study sample, and their prioritised choice of treatment modalities used to manage CLBP.

Table 4.8: Age groups and prioritised choice of treatment modality

Age Group	Modality	Number	Percentage (%)
20-30 yrs	1. Spinal mobilisation (SpM)	21	32
	2. Myofascial release / SpM	12	19
	3. General Exercise Program	14	22
31-40 yrs	1. Spinal mobilisation	6	29
	2. Spinal mobilisation	7	25
	3. Myofascial release	5	21
41-50 yrs	1. Spinal mobilisation	9	33
	2. Myofascial release / SpM	6	21
	3. General exercise program	9	32
51-60+yrs	1. Spinal mobilisation	4	33
	2. Spinal Mobilisation	6	40
	3. General exercise program	4	29

Spinal mobilisation was the overwhelming modality of choice in the management of CLBP in all age groups.

4.4.4 The use of evidence based modalities in the management of CLBP

NB. The time frame of the attendance of postgraduate courses is included in this section as the degree/extent of 'updated' knowledge of the study sample can be gathered.

Figure 4.3 below indicates the time frame of postgraduate courses attended by the study sample that focused on the management of CLBP

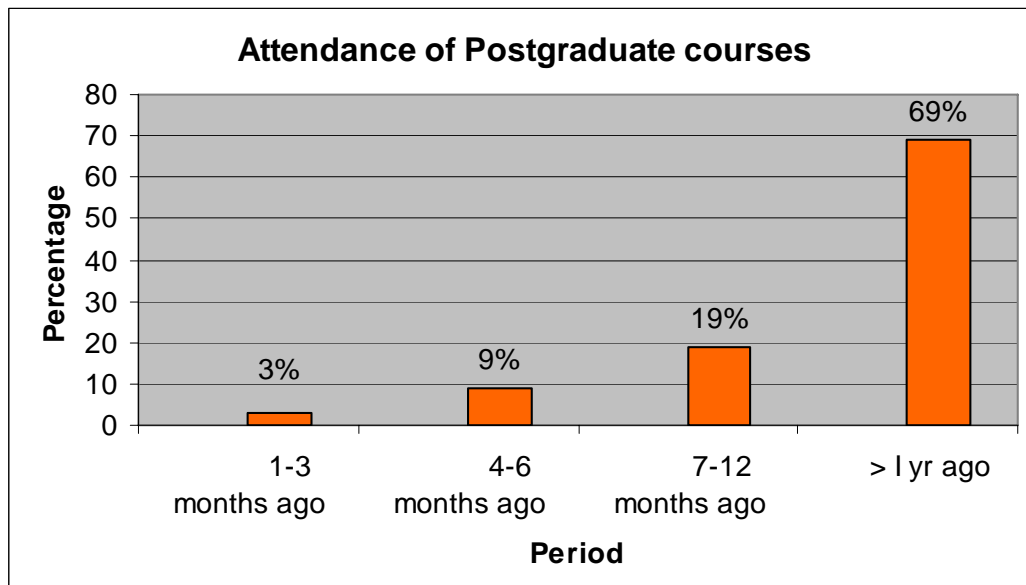


Figure 4.3: Attendance of postgraduate courses on CLBP (N = 96)

A substantial number of the study sample (69%) last attended a course that focused on the management of CLBP more than one year ago.

Figure 4.4 below demonstrates the insight of the study sample with regard to factors that lead to CLBP.

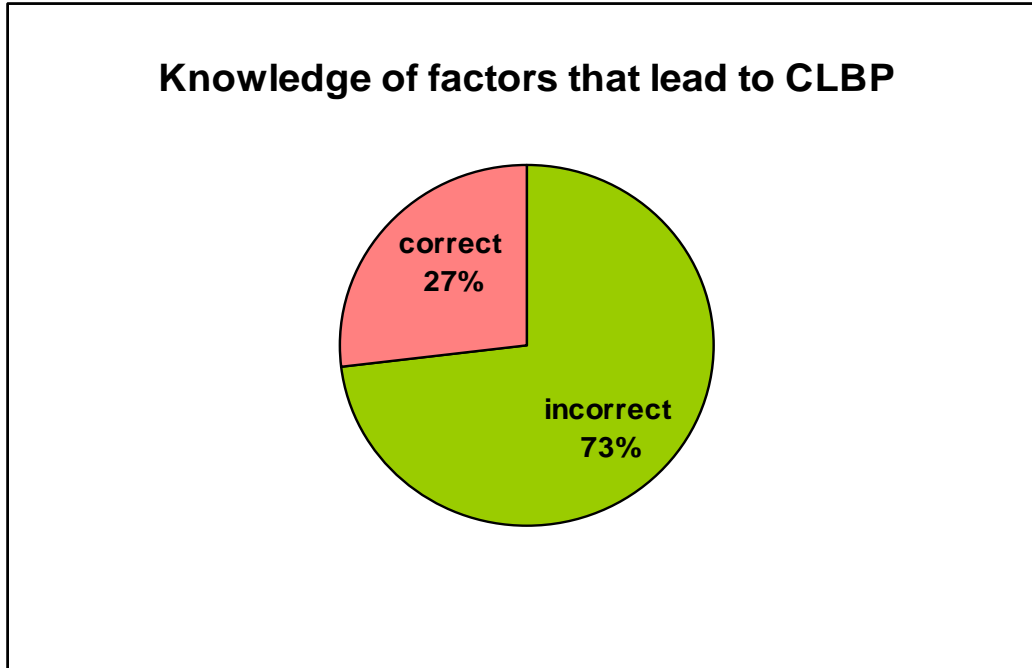


Figure 4.4: Knowledge of factors that lead to CLBP (N= 141)

Seventy three percent of the study sample was ignorant of the factors that lead to CLBP.

Figure 4.5 below reveals the insight of the study sample with regard to the pain mechanism involved in the chronic pain syndrome in patients with LBP.

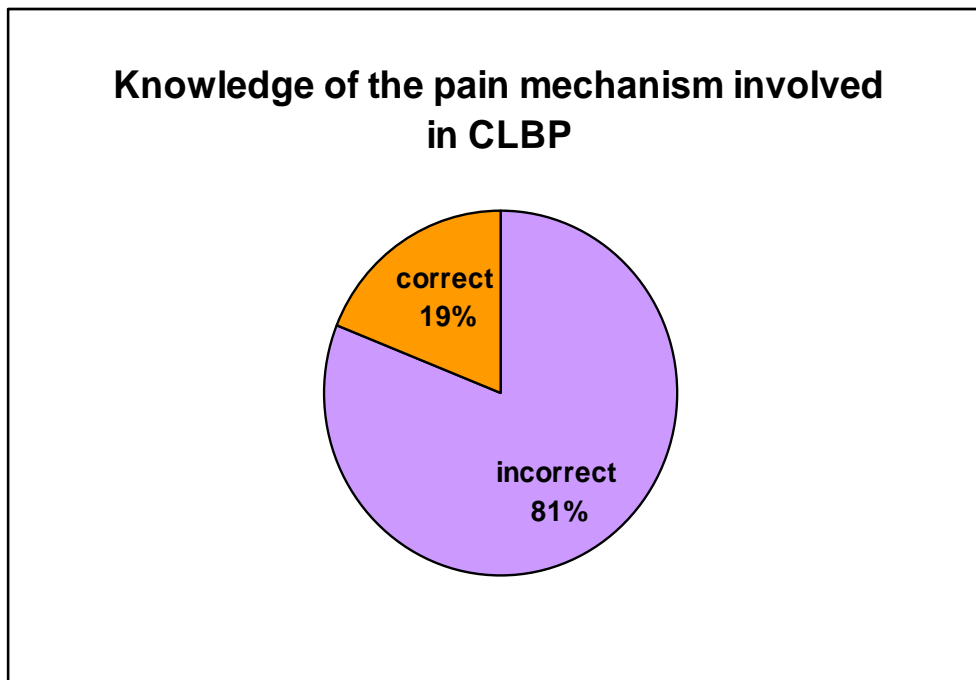


Figure 4.5: Knowledge of the pain mechanism involved in CLBP (N=141)

A large number of the study sample (81%) was oblivious to the pain mechanism involved in CLBP.

An analysis was done to determine how many respondents of the study sample correctly identified both the *pain mechanism* involved in CLBP as well as the *consequences that lead to CLBP*; only 10 respondents (7%) were able to correctly identify both these components.

Table 4.9 below provides information regarding the number in the study sample that assessed 'yellow flags' in CLBP.

Table 4.9: Percentage of study sample assessing 'yellow flags' (N = 141)

Assess 'yellow flags'	Number	Percentage (%)
<i>Yes</i>	132	94
<i>No</i>	9	6

With regard to assessing 'yellow flags' when managing patients with CLBP, a large percentage (94%) of the respondents assessed this aspect, yet none of the respondents were cognisant of all of the factors that need to be considered when assessing 'yellow flags'.

Figure 4.6 below indicates the average score obtained by the study sample with regard to assessing 'yellow flags'.

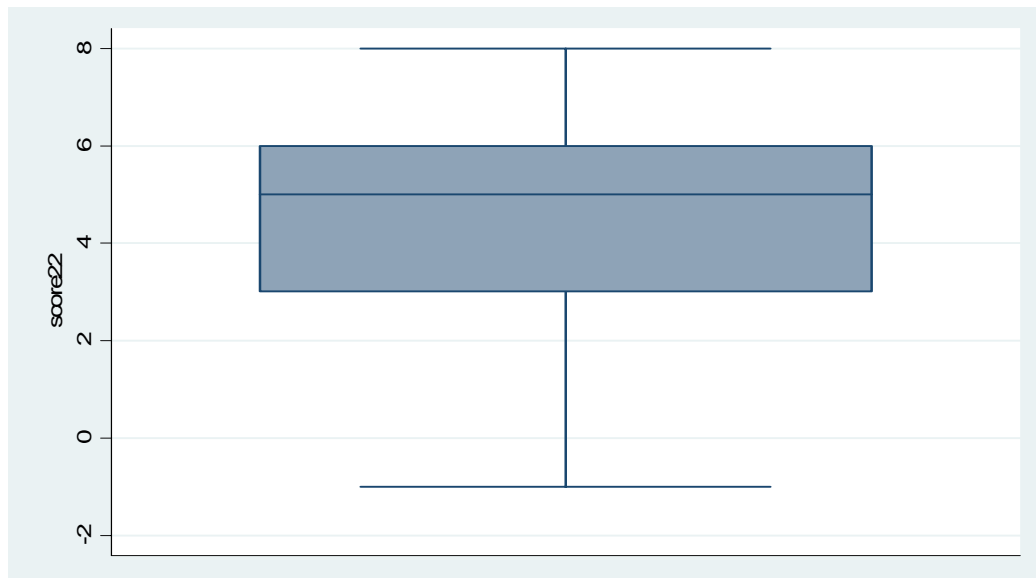


Figure 4.6: Mean score obtained for assessing 'yellow flags' (N=132)

NB. The gridline extends to -2 due to negative marking in the analysis of this question.

Most of the respondents scored between three and five out of nine.

4.4.4.1 The use of journal articles as evidence for the management of CLBP

This section indicates the number of journal articles that were read by the study sample in the last year; the source of the articles, participants' ability to critique articles as well as to rank articles according to the levels of evidence available.

Table 4.10 indicates the number of journal articles that were read by the study sample over the last year.

Table 4.10: Journal articles read over the last year (N=141)

Number of Articles	Number	Percentage (%)
0	23	16
1-5	66	47
6-10	30	21
11-15	4	3
16-20	5	4
21-30	10	7
>30	2	1
None-response	1	1

Most respondents (47%) read between 1-5 articles per year. Sixteen percent of the study sample did not read any articles.

Pearson's Chi-square test was used to investigate if there was an association between respondents who were aware of the consequences of CLBP to the number of journal articles read in a year and no association was detected ('p' = 0.788). Also no association was detected between those respondents who correctly identified the consequences that lead to CLBP to the pain mechanism involved in CLBP ('p' =0.2).

Table 4.11 indicates the source of the journal articles that were read by the study sample

Table 4.11: Source of Journal Articles (N =127)

Source	Number	Percentage (%)
Journal subscription	70	55
University database	17	13
Friends	26	21
World Wide Web (internet)	67	53
Other	21	17

NB: some respondents chose more than one option

The majority of the study sample obtained articles either from journal subscription (55%) or from the World Wide Web (www) (53%).

Figure 4.7 below shows distribution of the study sample's position on critiquing of journal articles.

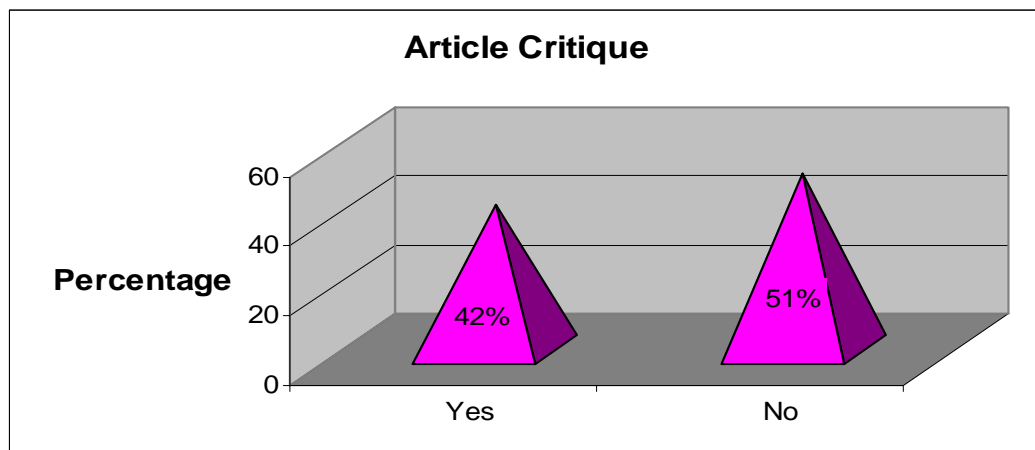


Figure 4.7: Critiquing of Journal articles (N=141)

A considerable number of the study sample (42%) critiqued the journal articles that they read.

Figure 4.8 below shows the mean scores obtained for identifying the characteristics of a good journal article.

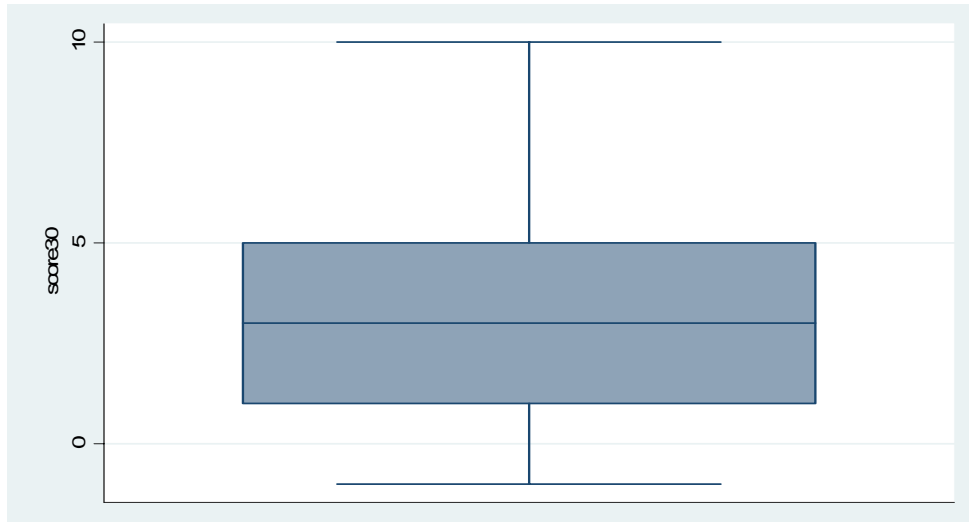


Figure 4.8: Mean score obtained for identifying the characteristics of a good journal article (N=135)

NB. The gridline extends below zero due to negative marking in the analysis of this question

Most respondents identified between one and five out of the ten correct responses with regard to identifying the characteristics that constitutes a good journal article.

Figure 4.9 below indicates the percentage of the study sample that was able to correctly rank journal articles according to the levels of evidence available.

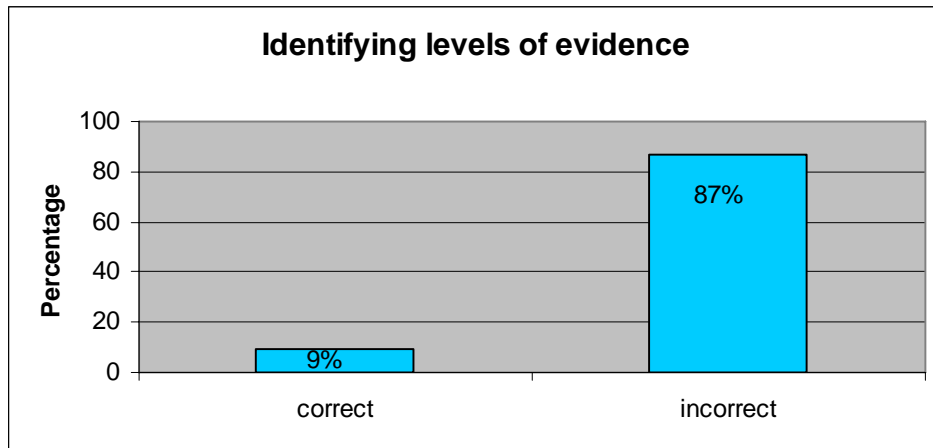


Figure 4.9: Identifying levels of evidence (N=122)

Only 9% of the study sample was able to correctly identify the levels of evidence of journal articles.

4.5 Conclusion

The most commonly used physiotherapy modalities used in the management of CLBP by physiotherapists in KZN were: spinal mobilisation and general exercises. These modalities were chosen on the strength of their undergraduate education and clinical experience. Modalities were not chosen on the basis of the available evidence regarding the chosen modality.

CHAPTER 5

5.0 DISCUSSION

5.1 Introduction

This survey was conducted to investigate the evidence based treatment modalities which are currently being used in the management of chronic low back pain by physiotherapists in KZN. Commonly used physiotherapy modalities in the management of CLBP by physiotherapists in KZN were also scrutinised as well as the reasons why the KZN physiotherapists select certain modalities to manage CLBP. The extent to which physiotherapists in KZN are using evidence based modalities when managing CLBP was also probed.

5.2 Sample Size and demographic information

Six hundred and eighty-five physiotherapists in KZN were registered with the health professions council at the time when this study commenced. All of these registered physiotherapists were included in the study. Hence the sample size was apt. A 31% response rate was achieved. A 30% response rate is considered adequate for survey questionnaires (Portney and Watkins, 2000). Hence a sufficient response rate was accomplished.

Twenty-one percent of the returned questionnaires were valid and statistically analysed. More than fifty percent of the returned questionnaires were valid and this was considered sufficient for the study. The only study found comparable to this study was a small scale exploratory survey of current physiotherapy practice with regard to exercise therapy in an acute hospital setting in the Republic of Ireland (Byrne et al., 2005). In this study one hundred and twenty postal questionnaires were distributed. Eighty-seven questionnaires were returned, thus a high response rate of seventy-three percent was achieved.

The current study had a larger sample size and covered a larger demographic area compared to the study by Byrne et al. (2005). The latter only targeted physiotherapists working in the out-patient department of an acute hospital setting in the republic of Ireland whereas in this study all the physiotherapists involved in the management of chronic low back pain were targeted: that is physiotherapists working in both the public (acute or rehabilitation setting) and private sector as well as physiotherapists involved in academic work.

The largest proportion of the study sample (49%) was aged between 20-30 years and the majority of the study sample was qualified between 3 and 10 years. Thus the results obtained in this study were obtained from newly qualified physiotherapists as well as those with a fair amount of experience. Hence it can be assumed that responses to the questions in this study were obtained from two factions; a group with up-to-date information (being recently qualified) but lacking in clinical experience; and a group with reasonable experience, but perhaps lacking in current information.

5.3. General knowledge of Kwazulu-Natal physiotherapists regarding CLBP

This study revealed that 73% of the study sample was ignorant of the consequences that lead to CLBP and that 81% were oblivious to the pain mechanisms involved in chronic pain. Similarly, a study by Ali and Thomson (2008) found that physiotherapists, among other health care professionals, lack knowledge regarding chronic pain mechanisms. Looking at the study sample above it would be expected that this basic knowledge be well-known by the sample. More so, looking at the large number of patients with CLBP that are being treated by the sample, (25% of the study sample treats more than twenty patients with CLBP per month while 28% treat between 11 and 20 patients with CLBP per month), this basic knowledge should be undisputed.

For effective treatment it is necessary that the physiotherapist is aware of the following basic facts: Simple back pain/ “non-specific” low back pain which results from mechanical strain or dysfunction results in CLBP (Waddell, 1999) and that evidence of tissue damage or nociception is often none existent in CLBP (Waddell, 1999; O’ Sullivan 2005).

Ali and Thomson (2008) state: “More focus needs to be paid to the education of the health professionals regarding their assumptions and understanding”. If knowledge is lacking, management will be inefficient thus resulting in poor service delivery and a poor prognosis for the patient. This further confirms the need for physiotherapists to have good knowledge in order to render an effective service for patients with CLBP. Poor service delivery can have catastrophic effects on the physiotherapy profession in general.

Daykin and Richardson (2004), state that physiotherapist’s belief regarding pain influences their clinical reasoning skills as well as explanations given to patients. One’s beliefs stems from the knowledge that one has on the subject. Daykin and Richardson (2004) suggest that for effective management of patients with CLBP, physiotherapists must be aware that their beliefs influence their management of these patients.

There is evidence to prove that chronic pain and disability due to simple backache is associated with psychological and social factors (Dersch et al., 2006; Kaapa et al., 2006; Koes et al., 2006; Vlaeyen et al., 2005; Hagan et al., 2005; De Jong et al., 2005; Lang et al., 2003; Khadilkar et al., 2003; Linton, 2000; Waddell, 1999; Kendall et al., 1997). Ninety-four percent of the study sample assessed the psychosocial aspects of CLBP, but none of the respondents were cognisant of all the factors that need to be assessed. The mean score obtained by the study sample with regard to the factors that should be assessed when evaluating psychosocial factors were between three and five out of nine. This further proves the lack of knowledge of the study sample.

A key aim in the management of CLBP patients is to restore good quality of life for the patient. If psychosocial factors are overlooked the possibility of a failed treatment is imminent, perpetuating the chronic pain cycle and disability, and thus resulting in a non-productive individual in society. Waddell (1999) states that if psychosocial factors are missed it can result in fortifying issues that are disabling. The fact that the study sample treats a large number of patients with CLBP per month, it is imperative that physiotherapists are cognisant of these psychosocial factors or 'yellow flags' to ensure the successful management of these patients.

Stevenson et al. (2006) identified that psychosocial factors are important factors that contribute to the recovery of patients with low back pain.

The clinical assessment of psychosocial factors includes: attitudes and beliefs about back pain; behaviour; compensation issues; diagnosis and treatment; emotions; family; and work (Waddell, 1999).

5.4 Commonly used physiotherapy modalities in the management of CLBP by physiotherapists in Kwazulu-Natal (KZN)

The commonly used physiotherapy modalities in the management of CLBP by physiotherapists in KZN include a general exercise program (30%), spinal mobilisation (28%), myofascial release (18%), education (12%) and training of local stabilisers (12%). However when asked to prioritise the treatment modalities spinal mobilisation was found to be the overwhelming modality of choice by the study sample, in all age categories. The main reason cited for this choice was due to undergraduate education received. Hence it can be deduced that the training received at undergraduate level is largely responsible for the choice of treatment modality selected when managing patients with CLBP post qualification.

Chiradejnant et al. (2003)'s study confirmed that spinal mobilisation assists with pain relief and improves mobility of the spine and that mobilisation of the lumbar spine has an immediate effect in relieving low back pain. Hence therapists would choose a modality/technique which produces an immediate positive effect, as patients expect to obtain some pain relief after having received treatment (Goosens et al., 2005). This may be a reason why spinal mobilization was one of the most commonly used treatment modalities in this study.

This study has established that a general exercise program is the most popular treatment modality used by the study population in the management of patients with CLBP. Therapeutic exercises undoubtedly decrease pain and disability, and improve quality of life in individuals with chronic low back pain. The evidence has also revealed that physiotherapy prescribed exercises (irrespective of the type of exercise) are most efficacious in the management of patients with CLBP (Lewis et al., 2008; Taylor et al., 2007; Ferreira et al., 2007; Goldby et al., 2006; Ferreira et al., 2006; Staal et al., 2005; Sculco et al., 2001; van Tulder et al., 2000; Mannion et al., 1999; Moffet et al., 1999), which explains why general exercises are used in the management of CLBP.

Myofascial release (MFR) is a soft tissue technique used to release soft tissue restrictions. When movement patterns are altered due to pain and disability, some muscle groups tend to shorten and tighten; hence MFR is used to restore length and mobility to the soft tissue. It also increases blood flow to the affected area; enhances lymphatic drainage and resets the proprioceptive sensory mechanism. That is, the central nervous system is readjusted enabling normal functional range of movement (ROM) to occur without eliciting the old pain pattern (Barnes, 1990). MFR is therefore used in the management of CLBP.

Education and training of the local stabiliser muscles is used to a much lesser extent (12%). Research has revealed that educating patients as well as training of the local stabiliser muscles is often time consuming and requires sound knowledge of the educator/therapist (Heymans et al., 2004; Lorimar et al., 2004; De Jong et al., 2005). Training of local stabilisers also requires a high level of skill of the therapist (O' Sullivan, 2000; Richardson and Jull, 1995), and thus this can explain why they are used to a much lesser extent when managing patients with CLBP. Perhaps due to the fact that 73% of the study sample is ignorant of the factors that lead to CLBP and 81% oblivious to the pain mechanisms involved in chronic pain, only 12% of the respondents include education in the management of CLBP.

5.5 The reasons why the KZN physiotherapists choose the modalities that they use to manage CLBP

The most popular reasons cited for the choice of treatment modality chosen were: undergraduate education; clinical experience; and through postgraduate courses / physiotherapy conferences.

Physiotherapy undergraduate education lays the foundation of basic information and knowledge that is required for the management of a patient. It is this basis which plants the seeds of thought upon which further information is built on. Hence, one always tends to rely on the basic information that one has received during undergraduate training. A strong foundation provides a platform for good clinical reasoning and sound management and this therefore explains why undergraduate education was such a popular reason for the type of modality chosen in the management of CLBP. The research committee of the Australian Physiotherapy Association and invited contributors (1999) state that undergraduate institutions play an important role regarding the attitudes of graduates with regard to evidence based practice. This thus indicates the impact of undergraduate education in clinical practice.

Attendance of postgraduate courses provides the therapist with tools/techniques that can help with decision making when managing patients with LBP.

Postgraduate courses also provide insight into the pathology, anatomical and physiological considerations of the condition under discussion. This therefore explains why therapists chose postgraduate courses as a possible reason for their choice of treatment modality. Physiotherapy conferences provide a platform for researchers to present the findings of their studies, thus depending on the level of evidence presented; vital evidence – based information can be obtained from conferences and be applied in the management of patients.

Clinical experience allows the therapist to explore and test all the ‘tools’ and knowledge acquired at undergraduate level as well as those from postgraduate courses and physiotherapy conferences. It also allows the therapist to discover which techniques provide the best outcome for their patient and hence its popularity with regard to the reasons cited for the type of modality chosen in the management of CLBP patients.

5.6 Use of evidence based modalities when managing CLBP.

Physiotherapists in this study did not use evidence from literature when selecting treatment modalities for the management of CLBP. Perhaps this is due to the sparse number of articles that are read by the respondents annually. Forty-seven percent (47%) of the study sample read between one and five articles per year, whilst 16% of the study sample did not read any articles. It may also be due to the fact that the majority of the respondents are unaware of the various levels of evidence that are available, consequently being gullible to any information that is read. Eighty-seven percent (87%) of the study sample were unable to correctly identify the levels of evidence of journal articles.

Forty-two percent (42%) of the study sample claimed to critique articles that they read. However, most respondents were only able to identify between one and five characteristics which constitutes a good journal article, out of the ten correct responses. This therefore proves that respondents were unable to discern between good and poor quality journal articles again accentuating credulity of the study sample.

Interpretation of results in journal articles can at times be difficult if one is not well versed with the statistics that were used, something that was alluded to by the respondents in this study. The language used in articles is sometimes intricate and can be a deterrent to reading of articles. This could be part of the reason why physiotherapists do not use the current available evidence in clinical practice. Another possible reason may be due to a lack of interest in this area of study and therefore the therapists do not read literature pertaining to this field.

Berger (2007) states that the available evidence provides little guidance to clinicians who need to decide which interventions to implement for chronic low back pain, hence the possibility of evidence based practice not being implemented despite there being clear guidelines as presented by Koes et al. (2006) and Waddell, (1999). Most respondents (47%) in this study only read between one and five articles a year and therefore may not be aware that guidelines do exist regarding the management of CLBP. In addition, evaluating evidence requires “critical appraisal skills” (The research committee of the Australian Physiotherapy Association and invited contributors, 1999) and therefore if these skills are lacking it would be difficult to recognise and implement ‘evidence.

5.7 Limitations of the Study

- The results for this study cannot be generalised to all the physiotherapists involved with the management of CLBP in SA, as the sample only consisted of physiotherapists from KZN.
- The reasons for the selection of treatment modalities could have been investigated more in-depth, hence getting a clearer idea regarding why certain treatment modalities are chosen.

CHAPTER 6

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The commonly used modalities in the management of CLBP are general exercises; spinal mobilisation; myofascial release; education and training of the local stabiliser muscles.

The reasons cited for their choice of modality selected to manage patients with CLBP include undergraduate education received, the attendance of postgraduate courses/physiotherapy conferences and through clinical experience.

From the reasons specified for the choice of treatment modality selected to manage patients with CLBP, this study has revealed that physiotherapists are not using the current available evidence to manage patients with CLBP.

6.2 Recommendations

6.2.1 Recommendations from study

- It is recommended that a course in evidence based practice (EBP) be available to practicing physiotherapists with the emphasis of discerning between good and poor articles, that is, the ranking of journal articles and the critiquing of articles. The trend toward evidence based care is obvious in the current literature. It is imperative that clinicians are cognisant of this in order to provide the best possible care to patients.

- EBP must be emphasised at an undergraduate level as most qualified physiotherapists rely on their undergraduate education in their current clinical practice.
- Research in physiotherapy practice by all physiotherapy practitioners should be encouraged thus aiding EBP.
- The vast cost involved in conducting a research study may be a deterrent, thus more easily available and fully compensated funding would be encouraging. As some funding is already available through the academic institutions perhaps other institutions (private and government) should offer funding for research studies. The availability of funding should be well advertised such that all members of the physiotherapy profession would be aware of this and it may persuade them in conducting research studies.

6.2.2 Recommendations for further research

- A randomised-controlled trial to determine the most effective type of exercise therapy in the management of CLBP needs to be carried out to strengthen the findings of this study.
- A survey to determine the most prevalent psychosocial factor(s) present in patients with CLBP would also aid to strengthen this study.
- A randomised-controlled trial to determine the efficacy of a multi-disciplinary rehabilitation program in the management of CLBP also needs to be done.
- A randomised-controlled trial to determine the efficacy of spinal mobilisation in the management of CLBP would also help strengthen the evidence available for the management of CLBP.

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APPENDIX A

Dear physiotherapist,

My name is Vanesh Naidoo. I am studying for a Master's degree in Physiotherapy through the University of the Witwatersrand. As part of the program, I'm doing research on the physiotherapy modalities used in the management of chronic low back pain (CLBP) by physiotherapists in Kwazulu-Natal.

The aim of the study is to investigate the evidence based treatment modalities which are currently being used in the management of chronic low back pain, by physiotherapists in KZN. **Chronic pain is defined as "more than 3 months of continuous pain."**

What is the significance of this study?

The literature has revealed that 30 000 South African's suffer from neck and back problems on a daily basis. Compensation costs for LBP in South Africa in the year 2000 was approximately **two hundred million rands**. The literature further reveals that disability due to chronic low back pain is increasing faster than any other form of incapacity.

No studies have been done in South Africa / KZN to assess the treatment modalities that are being used in the management of CLBP, considering the disability and large socio-economic impact it results in. The results of this study will help establish the extent to which evidence-based treatment modalities are being used in the management of patients with CLBP in KZN. This study will also identify the commonly used treatment modalities in the management of CLBP by physiotherapists in KZN.

What would you be expected to do?

For data collection purposes, a questionnaire was developed with the aid of the available literature on current and traditional practices in the physiotherapy management of CLBP. You are invited to participate in this study. It would be greatly appreciated if you would participate in the study by completing the attached questionnaire. Participation in this study is voluntary and thus you are by no means compelled to complete the questionnaire. Non participation in the study will not prejudice you in any way. The completion of this questionnaire will be regarded as consenting to participating in this study. Filling in the questionnaire will take approximately **15 minutes** of your time. **Please return the completed questionnaire by 6th June 2008 using the self addressed-stamped envelope provided.** Your honesty in filling in of the questionnaire is greatly appreciated. The results of the study will be made available to the physiotherapy profession.

Confidentiality

You are not required to write your name or any identifying information on the questionnaire and hence the information obtained from the questionnaire will be anonymous.

For more information or if you have any queries please contact me on 082 420 3657 or vaneshm@gmail.com. Fax: 031 564 5043

Yours truly,
Vanesh Naidoo

NB. All pages are printed double sided.

NB. Detach/use this page to assist with Q.20

POSSIBLE REASONS FOR 'YES'

1. Undergraduate education
2. Postgraduate courses / Physiotherapy conferences
3. Pathophysiological basis
4. Clinical experience proves effectiveness of modality
5. Through colleague's success with treatment modality
6. Evidence based literature
7. Time saving
8. Motivates patients
9. More effective than group classes
10. Other, please specify _____

POSSIBLE REASONS FOR 'NO'

1. Not taught at university
2. Therapist dislikes the technique/modality
3. No evidence to support the efficacy of the modality/technique
4. The modality/technique is time consuming
5. Patient's dislike this technique/modality
6. The technique/modality is dangerous
7. Therapist lacks confidence to utilize the technique/modality
8. Therapist does not believe in efficacy of modality/technique
9. Modality not available at the workplace
10. Have not considered the modality/technique
11. Modality/technique not known
12. Clinical experience has found this technique/modality ineffective
13. Do not have space to conduct group classes
14. Other, please specify _____

Questionnaire

- Please answer all questions HONESTLY
 - Please fill in the questions by either marking your appropriate response with an 'x', or by writing in your answer in the specified areas.
 - Thank you for participating in this study
-

1. To which age group do you belong?

- 20-30 31-40 41-50 51-60+

2. What is your gender?

- Male Female

3. What qualifications do you have?

- Diploma in Physiotherapy
 B.Physiotherapy
 BSc. Physiotherapy
 MSc. Physiotherapy
 PhD

4. For how many years have you been qualified as a physiotherapist?

- < 3yrs 3-5yrs 6-10yrs >10yrs

5. From which institution did you qualify?

- University of Cape Town University of the Western Cape
 University of the Witwatersrand University of the Free State
 University of Pretoria Stellenbosch University
 Medical University of South Africa University of Kwazulu-Natal
 Other, please specify _____

6. Are you a practicing physiotherapist?

- Yes No

7. What is your current employment?

- Private practitioner
- State employed physiotherapist (incl. community service)
- Both private and state hospital employment
- Academic
- Other, please specify _____

8. What does your current work involve?

- Outpatients/Rooms work
- Hospital work only, (in patients)
- Combination of in and out patients
- Combination of academic and clinical work
- Academic work only

9. In which area/s of physiotherapy practice do you currently/mainly work?

- General practice
- Orthopaedics
- Respiratory
- Neurology
- Sports
- Paediatrics
- Spinal cord injuries
- Surgery
- Neuromusculoskeletal
- Other, please specify _____

10. Are you a member of a professional body?

- Yes
- No

11. If yes, which one/s: _____

12. Are you a member of any physiotherapy special interest group?

- Yes
- No

13. If yes to 12 above, please tick the appropriate one

- OMT
- Sports
- Orthopaedics
- Other, please state _____

14. Do you treat patients presenting with chronic low back pain (CLBP)?

- Yes No

15. If yes to 14 above, how many patients with CLBP do you treat per month?

- 1-5 6-10 11-20 >20

16. Have you done any post-graduate courses relating to the management of CLBP?

- Yes No

17. If yes to 16 above, when did you last attend a course that focused on management of CLBP?

- 1-3 months ago 4-6 months ago
 7-12 months ago >1 year ago

18. If yes to 16 above, please list below the postgraduate courses you have attended?

19. From your understanding, which of the following results in CLBP?

- Simple backache (mechanical)
 Nerve root pain
 Serious spinal pathology

20. Which of the following physiotherapy modalities do you use to manage patients with CLBP?

Just tick Yes/No for each of the following modalities and choose from the previous page (the provided list) the reason(s) that best describes why you use/do not use the modality.

Just write down the number(s) that correspond(s) to the reason(s) you wish to give.

TREATMENT MODALITY	YES/NO	REASONS
Massage	Yes ----- No	-----
Myofascial Release	Yes ----- No	-----
Neural tissue mobilisation	Yes ----- No	-----
Spinal Mobilisation	Yes ----- No	-----
Spinal Manipulation	Yes ----- No	-----
Traction	Yes ----- No	-----
Dry Needling	Yes ----- No	-----
Interferential Therapy	Yes ----- No	-----
Ultrasound Therapy	Yes ----- No	-----
Laser Therapy	Yes ----- No	-----
Short-wave Therapy	Yes ----- No	-----
Cognitive and Behavioural Therapy	Yes ----- No	-----
Ergonomic/Kinetic handling Advice	Yes ----- No	-----
Education regarding pathology or condition	Yes ----- No	-----
Training of the local stabilizers	Yes ----- No	-----

	Yes	-----	-----
Motor control exercises	No		
	Yes	-----	-----
General Exercise program	No		
	Yes	-----	-----
Stretching exercises	No		
Do you conduct group exercise classes?	Yes	-----	-----
	No		
Do you conduct individual exercise sessions?	Yes	-----	-----
	No		

REASON(s)

Please indicate a modality that you **USE**, which is not mentioned above

Please indicate a modality that you would **NOT** use, which is not mentioned above

21. Do you assess 'yellow flags' when managing CLBP?

Yes

No

22. What aspects are you particularly looking for when assessing 'yellow flags'?

- | | |
|--|--|
| <input type="checkbox"/> Work issues | <input type="checkbox"/> Family input |
| <input type="checkbox"/> Compensation Issues | <input type="checkbox"/> Diagnosis and treatment |
| <input type="checkbox"/> Emotions | <input type="checkbox"/> Behaviour |
| <input type="checkbox"/> Attitudes and Beliefs | <input type="checkbox"/> relationship issues |
| <input type="checkbox"/> Poor home environment | <input type="checkbox"/> Depression |
| <input type="checkbox"/> Psychological/Psychiatric treatment | |
| <input type="checkbox"/> Other, please specify _____ | |
| <input type="checkbox"/> Unsure | |

23. Do you go through a process of clinical reasoning before choosing a treatment modality or technique?

Yes

No

24. Please prioritise, what you think are the three most important modalities in the management of CLBP? Please provide a reason for your answer.

MODALITY

REASON

1.

2.

3.

25. Please indicate the pain mechanism(s) associated with chronic pain?

Nociception

Central sensitization

General sensitization

Peripheral sensitization

Central phenomenon

26. How many journal articles relevant to OMT (orthopaedic, manual therapy, neurological, pain articles, etc) have you read in the last year?

0

1-5

6-10

11-15

16-20

21-30

>30

27. If none, please provide a reason?

28. If yes to 26 above, how did you obtain these articles?

- Journal subscription: name/s: _____
- University database
- From a friend
- The Internet
- Other, please specify: _____

29. Do you critique the journal articles that you read?

- Yes No

30. Which of the following attributes make a good journal article?

- | | |
|---|---|
| <input type="checkbox"/> Random allocation of subjects | <input type="checkbox"/> Concealed allocation of subjects |
| <input type="checkbox"/> Known allocation of subjects | <input type="checkbox"/> Baseline comparability |
| <input type="checkbox"/> Baseline comparability not essential | <input type="checkbox"/> Blinded subjects |
| <input type="checkbox"/> Non-blinded subjects | <input type="checkbox"/> Non-blinded assessor's |
| <input type="checkbox"/> Blinded assessor's | <input type="checkbox"/> Blinded therapists |
| <input type="checkbox"/> Non-blinded therapists | <input type="checkbox"/> No Follow up |
| <input type="checkbox"/> Adequate follow up | <input type="checkbox"/> Between group comparisons |
| <input type="checkbox"/> Intention to treat analysis | <input type="checkbox"/> Point estimates and variability |
| <input type="checkbox"/> No idea | |

31. Please rank the following from the strongest to the weakest level of evidence. 1= strongest and 5= weakest

- Respected opinions based on clinical experience
- Well designed, non-experimental study
- Well designed, non-randomized controlled trial
- Systematic Reviews
- Randomised Controlled Trial of an appropriate size

Thank you!

APPENDIX B

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

R14/49 Naidoo

CLEARANCE CERTIFICATE

PROTOCOL NUMBER M070908

PROJECT

Physiotherapy Modalities Used in the Management of Chronic Low Back Pain

INVESTIGATORS

Ms V Naidoo

DEPARTMENT

Department of Physiotherapy

DATE CONSIDERED

07.09.28

DECISION OF THE COMMITTEE*

APPROVED UNCONDITIONALLY

Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.

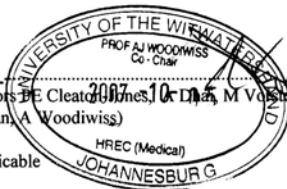
DATE 07.10.01

CHAIRPERSON

(Professors B E Cleaton, J O Dine, M Voster, C Feldman, A Woodiwiss)

*Guidelines for written 'informed consent' attached where applicable

cc: Supervisor: Mr W Mudzi



DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10005, 10th Floor, Senate House, University.

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES