

An investigation into the physiotherapy management of neck pain at
the Muhimbili Orthopaedic Institute in Dar es Salaam, Tanzania

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Outcome

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Abstract

Neck pain is a common health problem affecting the general population and it can be associated with significant activity limitation. It contributes to a number of lost workdays and high costs in its management. The purpose of this study was to identify the trends in the physiotherapy management of patients suffering from episodes of neck pain at the physiotherapy department of the Muhimbili Orthopaedic Institute (MOI), Dar es Salaam, Tanzania. A non-experimental retrospective study design utilising a quantitative research method was chosen. The physiotherapy records of all patients with neck pain episodes who were referred to the department between 2nd January and 30th June 2004 were purposively selected for the study. Information on the treatment modalities that were used, follow-up treatment, length of the treatment courses and the documented outcomes of the physiotherapy interventions were captured from the records. Descriptive and inferential statistical analyses, using the Chi-square and Kruskal-Wallis tests, were done on the data. The results identified three diagnostic categories of the neck pain, namely cervical spondylosis, cervicobrachialgia and non-specific neck pain. The physiotherapists used 9 different modalities, namely various electrophysical modalities, therapeutic exercise, massage, cervical traction and collars in managing neck pain. Furthermore up to 35 combinations of the modalities were used in the treatment of the neck pain. Most of the patients received physiotherapy treatment twice a week for an average period of 6 weeks. The physiotherapy records lacked information on treatment outcomes and indicators for discharging patients following a course of treatment. Based on the results of the study and in context of evidence-based practice recommendations are made to the physiotherapy department of the MOI and the Association of Physiotherapists in Tanzania. There is a need to standardise the recording of interventions, indicators for outcomes and discharge from physiotherapy.

Declaration

I declare that “An investigation into the physiotherapy management of neck pain at the Muhimbili Orthopaedic Institute in Dar es Salaam Tanzania” is my own work, and that all the sources used or quoted have been indicated and acknowledged by means of complete references.



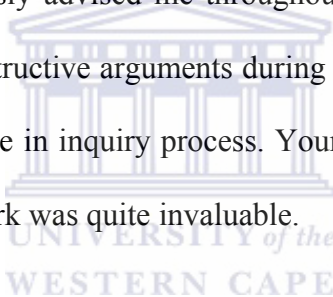
Signed:

This day of month year

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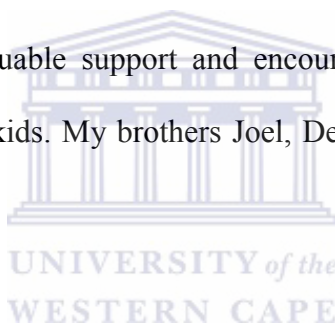
Lastly but not least, to all undergraduate students and the rest of department staff whom I interacted with throughout my period of stay in the University of the Western Cape.

Dedication

My love to sweetie Aquilla for continuing tolerance and encouragement. My daughter Digna (Bingi) and sons -little Dominic (Baraka) and Michael (Fanaka) for doing without me (and their mother too) for such a long time.

To Theresia Paul Njau (Manka) for being such a tender mother to the kids all the time Aquilla and I were away for studies. PSD and Maria for reminiscence and encouragement. Fraymond and Marietha for keeping an eye on my pace.

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My mother in-law Elizabeth Nsando Mushi for reminding me all the days that everyone loves me and missing me too.

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Definition of terms

Placebo

According to Shapiro (1961) the placebo is ‘any therapeutic procedure (or that component of any therapeutic procedure) which is given deliberately to have an effect, or unknowingly has an effect on a patient, symptom, syndrome or disease, but which is objectively without specific activity for the condition being treated. Placebo could be a subjective procedure that is administered by suggestion



Placebo analgesia

According to Cheing & Cheung (2002) this term refers to ‘improvements in a therapeutic context that are not due to specific therapeutic factors, but may be related to a patient’s intrinsic capacity.

Practice knowledge

According to Higgs & Kitchen (2001), this term refers to knowledge arising from professional practice and experience. A physiotherapist adds to her/his personal knowledge base during each patient encounter and by so doing she/he accumulates certain knowledge. The knowledge is then used along with many other sources of information including high quality clinical research to inform future practice.

List of abbreviations

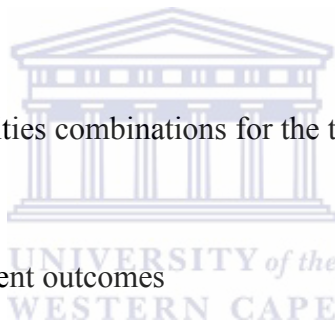
ADL	Activities of Daily Living
CB	Cervicobrachialgia
CPD	Continuing Professional development
CS	Cervical spondylosis
EBP	Evidence-based Practice
MOI	Muhimbili Orthopaedic Institute
MO	Medical Officer
NP	Neck pain
NMAS	Neuromusculoarticular system
NSNP	Non-specific neck pain
ROM	Range of Movement
TENS	Transcutaneous Electric Nerve Stimulator

LIST OF TABLES

- 4.1. Distribution of gender of the study sample
- 4.2. Distribution of the neck pain episodes
- 4.3. Diagnostic categories within gender
- 4.4. Percentage distribution of modalities used for treatment interventions
- 4.5. Distribution of modalities within cervical spondylosis
- 4.6. Distribution of modalities within cervicobrachialgia
- 4.7. Distribution of modalities within non-specific neck pain
- 4.8. Total duration of treatment in weeks
- 4.9. Number of treatment sessions per week
- 4.10. Distribution of frequency and treatment time (minutes) per modality
- 4.11. Comparison of means between frequency of treatment per week and number of treatment weeks

LIST OF FIGURES

- 4.1. Distribution of age of the study sample
- 4.2. Distribution of the neck pain episodes among age groups
- 4.3. Distribution of modalities among diagnostic categories
- 4.4. Distribution of modalities combinations for the treatment of neck pain in cervical spondylosis
- 4.5. Distribution of modalities combinations for the treatment of neck pain in cervicobrachialgia
- 4.6. Distribution of modalities combinations for the treatment of neck pain in non-specific neck pain
- 4.7. Distribution of treatment outcomes



APPENDICES

- i. Data capture sheet for a retrospective study on the management of neck pain at the Muhimbili Orthopaedic Institute
- ii. Proof of data capture sheet review
- ii. Proof of participation in the case files sorting
- ii. Proof of validity and reliability exercise
- iii. Consent letter
- iv. Permission to conduct the study
- v. Certificate of authenticity



TABLE OF CONTENTS

Title Page	Page
Keywords-----	i
Abstract-----	ii
Declaration -----	iii
Acknowledgements-----	iv
Dedication -----	v
Definition of terms-----	vi
List of abbreviations -----	vii
List of tables -----	viii
List of figures -----	ix
Appendices -----	x



CHAPTER ONE

BACKGROUND INFORMATION

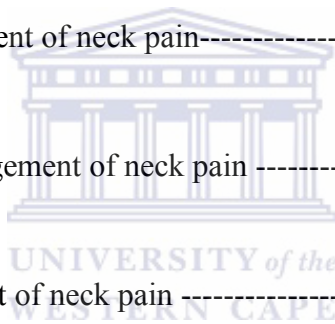
1.1. Introduction-----	1
1.2. Motivation for the study-----	2
1.3. Statement of the problem-----	3
1.4. Research question-----	4
1.5. Aim of the study-----	4
1.6. Objectives of the study-----	4
1.7. Significance of the study-----	5

1.8. Summary of the chapters-----	5
1.9. Outline of the chapters-----	5

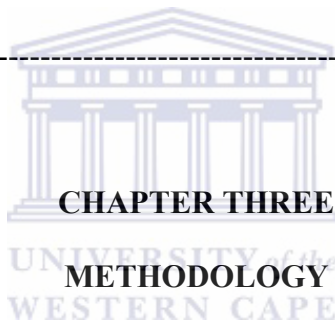
CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction -----	6
2.2. Definitions and description -----	6
2.2.1. Evidence based practice -----	6
2.2.2. Pain -----	6
2.2.3. Neck pain-----	7
2.3. Some aspects of development of neck pain-----	8
2.4. Controversies in the management of neck pain -----	10
2.5. Physiotherapy management of neck pain -----	11
2.5.1. Evidence for use of physiotherapy -----	11
2.5.2. Selection for the treatment of neck pain -----	11
2.5.3. Classification of neck pain and duration of treatment -----	13
2.5.4. Patients' records -----	14
2.6. Review of modalities used for the treatment of neck pain -----	15
2.6.1. Electrophysical modalities -----	15
2.6.1.1. TENS-----	15
2.6.1.2. Therapeutic ultrasound-----	16
2.6.1.3. Interferential therapy -----	17
2.6.1.4. Diathermy -----	17



2.6.1.5. Infrared irradiation -----	18
2.6.1.6. Heat and cold -----	19
2.6.2. Physical treatments -----	20
2.6.2.1. Therapeutic exercises -----	20
2.6.2.2. Manipulative therapy -----	20
2.6.2.3. Cervical traction -----	22
2.6.2.4. Therapeutic massage -----	23
2.6.3. Combination of modalities -----	24
2.7. The perspective of outcomes -----	25
2.8. Summary -----	28



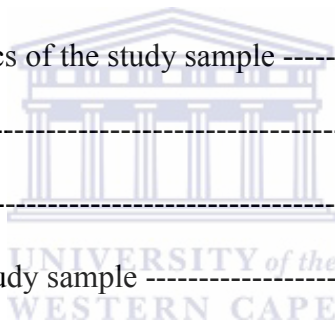
3.1. Introduction -----	29
3.2. Research setting -----	29
3.3. Research design -----	29
3.4. Study population -----	30
3.5. Sample size-----	30
3.5.1. Inclusion criteria -----	30
3.5.2. Exclusion criteria -----	31
3.6. Sampling method -----	31
3.7. Method of data collection -----	31
3.8. Validity of the study instrument -----	32

3.9. Procedure -----	33
3.10. Data capturing -----	33
3.11. Data analysis -----	33
3.12. Ethical consideration -----	34
3.13. Summary -----	35

CHAPTER FOUR

RESULTS

4.1. Introduction -----	36
4.2. Demographic characteristics of the study sample -----	36
4.2.1. Gender distribution-----	36
4.2.2. Age distribution-----	37
4.2.3. Occupation of the study sample -----	38
4.3. Profile of diagnostic categories in neck pain-----	38
4.3.1. Gender and distribution of neck pain -----	38
4.3.2. Prevalence of neck pain episodes among age groups -----	41
4.3.3. Radiographic investigations -----	42
4.4. Physiotherapy management of neck pain in the study sample -----	42
4.4.1. Selected modalities for interventions -----	42
4.4.2. Combination of modalities -----	48
4.4.3. Distribution of attendance of patients -----	52
4.4.4. Duration of treatment per modality-----	53

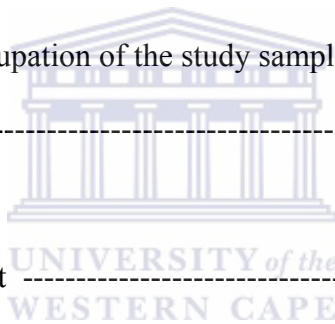


4.4.5. Number of sessions per week and duration of attendance -----	54
4.5. Documented interventions and the outcome -----	54
4.6. Indicators for discharge -----	55
4.7. Summary -----	55

CHAPTER FIVE

DISCUSSION

5.1. Introduction -----	57
5.2. Demographic characteristics and neck pain episodes -----	57
5.2.1. Age, gender and occupation of the study sample -----	57
5.2.2. Diagnoses -----	58
5.3. Physiotherapy management -----	59
5.3.1. Therapeutic exercises -----	59
5.3.2. Cervical traction -----	60
5.3.3. Therapeutic massage -----	61
5.3.4. Electrophysical agents -----	61
5.3.5. Collar -----	63
5.4. Selection of treatment parameters -----	63
5.5. Combination of treatment modalities -----	64
5.6. Frequency of follow-up and treatment duration -----	65
5.7. Outcome of the treatment interventions -----	66
5.7.1. Indicators for treatment progress -----	66



5.8. Summary ----- 68

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1. Introduction ----- 69

6.2. Summary ----- 69

6.3. Limitations of the study----- 71

6.4. Recommendations ----- 71

 6.4.1. Documentation of patient information ----- 71

 6.4.2. Developing treatment guidelines ----- 72

 6.4.3. Assessment ----- 72

 6.4.4. Adopting an outcomes-based approach ----- 72

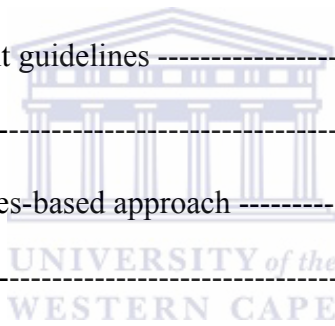
 6.4.5. EBP approach ----- 73

 6.4.6. Ongoing research ----- 73

 6.4.7. Undergraduate curriculum ----- 73

6.5. Conclusion ----- 73

References ----- 74



CHAPTER ONE

BACKGROUND INFORMATION

1.1. Introduction

This study was undertaken to investigate the physiotherapy management of patients with neck pain episodes at the Muhimbili Orthopaedic Institute (MOI) in Dar Es Salaam Tanzania. Neck pain (NP) is a common health problem affecting the general population and it can be associated with significant activity limitation (Côté, Cassidy & Carroll, 1998; Van der Windt, Van der Heijden, Van den Berg et al., 1999; Picavet & Schouten, 2003; Rathore, 2003; Hedley, Chiu & Lam, 2005). About 18 percent of the adult population will experience NP in a course of one year (Côté, Cassidy, Carroll & Kristman, 2004), and about 5 to 10 percent will have a significantly disabling neck problem (Croft, Lewis, Papageorgiou, et al., 2001). The chances for the occurrence of NP increases with age (Ståhl, Mikkelsen, Kautiainen et al., 2004) with women usually more affected than men (Côté et al., 1998; Viljanen, Malimivaara, Uitti et al., 2003; Häkkinen, Kautiainen, Nykänen et al., 2004). NP contributes to a number of lost workdays (Haneline, 2005) and high costs in its management (Borghouts, Koes & Bouter, 1998; Ylinen, Salo, Nykänen et al., 2004). The management of NP poses great challenges to the health services as apart from the differences in underlying pathophysiology the resulting pain may look similar and patients may have some difficulty in describing it (Vogt, Molly, Simonsick et al., 2003; Ylinen et al., 2004). The same applies to the treatment where the selection of treatment might not be entirely appropriate, although, generally speaking, physical management has been reported to demonstrate greater value over medical management (Gross, Kay, Hondrats et al., 2002; Wlodyka-Demaille,

Poiraudeau, Catanzariti et al., 2002; Binder, 2003).

There is no actual figure indicating the global prevalence of neck problems as there exists a few population-based studies in the general population. It is, however, estimated that the ailment affects young adults to moderately older adults within the region of 10 – 17 percent (Côté, Cassidy & Carroll, 2003). There is dearth of reports from the developing world. In Africa, for example, little has been reported from Kenya and Nigeria where the prevalence is reported to lie between 6 and 16 percent (Galukande, Muwazi & Mugisa, 2005). There has not been any study in Tanzania to determine the prevalence of NP episodes although one would not expect much difference in comparison with other countries of the African continent.

This study was focused mainly on the MOI's characteristic application of regimens of physiotherapy treatment for NP. The identified treatment techniques were compared with the currently existing evidence-based NP regimens gathered from wide range of studies, which shall be elaborated on in the study of the literature.

1.2. Motivation for the study

The researcher has been practising physiotherapy for 21 years. He has been fully involved in physiotherapy training at the only school of physiotherapy situated at the Kilimanjaro Christian Medical Centre (KCMC), Moshi, Tanzania. He has as well participated in clinical activities where patients, including those suffering from various forms of NP, were treated. During the period of practise, the researcher witnessed some patients returning with recurrent NP whilst a few failed to complete their scheduled treatment programme due to various and

unknown reasons. With respect to the burden of NP to the country and the challenge for evidence for best physiotherapy practice, the researcher identified the need to investigate the pattern of the management of patients with NP episodes in one of the physiotherapy departments in the country. The MOI was chosen to host this study for the following two reasons: (i) being a specialised hospital for orthopaedic medicine, the hospital could give a relatively large sample for the study; (ii) being an institution which has cooperated for long time with the School of Physiotherapy in clinical teaching activities, the researcher found the centre appropriate for the study.

1.3. Statement of the problem

It is standard practice at the MOI for Medical Officers (Mos) to refer patients with NP to the physiotherapy department for treatment. The physiotherapists use various modalities in developing regimens for the management of the NP. However, the combination of the modalities and duration by which the intervention is used seems to depend entirely on knowledge, skills and physiotherapists' preferences with respect to their experience than contemporary evidence of efficacy. To the researcher's knowledge, there has been no reported study in the country on the physiotherapy management of patients with NP in relation to commonly and frequently used combinations of modalities, the duration by which therapy is administered and the outcomes in the management of the NP. Therefore, there is scarce knowledge about the selection of regimens for NP management, and that this scarcity may predispose to failure in critically evaluating the efficacy of the physiotherapy interventions.

1.4. Research question

Since pain is the major factor resulting in people with NP to seek help from the hospital, three research questions were postulated:

- 1.4.1. What are the trends in the physiotherapy management of patients suffering from episodes of NP?
- 1.4.2. What is the average treatment time that was used in the management of episodes of the NP?
- 1.4.3. What are the documented outcomes and indicators used for discharging patients from physiotherapy?

1.5. Aim of the study

The primary aim of this study was to determine from a review of patients' records, the treatment regimens used by physiotherapists, and the documented outcomes in the management of patients suffering from NP episodes at the MOI, Dar es Salaam, Tanzania.

1.6. Objectives of the study

In order to meet the aim of the study, the following objectives were identified:

- 1.6.1. To identify trends in physiotherapy interventions selected in the management of patients suffering from NP episodes;
- 1.6.3. To identify relationship between frequency of follow-up treatment and treatment duration;

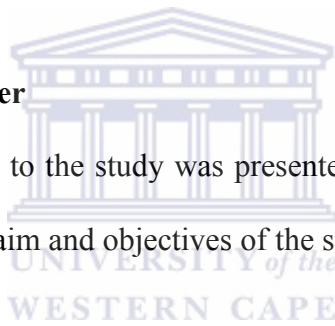
1.6.3. To identify the documented outcomes of the physiotherapy interventions.

1.7. Significance of the study

This study will provide information that may form a link of understanding between current physiotherapy practices, not only at the MOI, but also to other physiotherapy departments in Tanzania and Africa, of the modalities and parameters for the treatment of the NP episodes. Its outcome may serve as a base of reference when studying further on the physiotherapy management of NP episodes, suggesting changes in the management options for the NP at the MOI, and also in the review of the physiotherapy training curricula in Tanzania as well as Africa, on the aspects of the management of the NP.

1.8. Summary of the chapter

In this chapter the introduction to the study was presented. The motivation for the study, as well as the research questions, aim and objectives of the study were explained.



1.9. Outline of the chapters

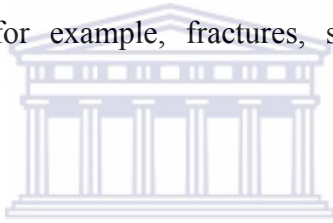
This mini thesis consists of five more chapters. Chapter two is the study of the literature for this study where literature on NP and modalities chosen for the physiotherapy management of NP shall be highlighted. Chapter three will describe the methodology this study used, while in chapter four the results of this study shall be presented. Chapter five shall discuss the results. Finally, in chapter six the conclusion, limitations of this study and recommendations, based on the results, are presented.

CHAPTER TWO

STUDY OF THE LITERATURE

2.1. Introduction

This chapter amasses literature from various sources to exemplify theories and practice in relation to the management of patients suffering from NP episodes. The review of the literature was done in the contextual framework of physiotherapy practice. A total of five databases were used to extract best evidence literature on physiotherapy for NP episodes. These were Medline, Embase, CINAHL, PEDro and Physiobase. Google and Altavista search engines were also used to locate additional information for the study. This study excludes serious pathology, for example, fractures, spinal cord injuries, tumours and infections.



2.2. Definitions and description

2.2.1 Evidence-based practice

Evidence-based practice entails “the integration of the best research evidence with clinical expertise and patients’ values” (Maher, Sherrington, Elkins et al., 2004, p.645). It can be described as a broad term that refers to the scientific and systematic process of decision-making about healthcare practices that takes into account three core elements, namely clinical research evidence, clinicians’ expertise, and patients’ values.

2.2.2. Pain

According to International Association for the Study of Pain (IASP) pain is described as ‘an unpleasant sensory and emotional experience associated with actual or potential tissue

damage, or described in terms of such damage' (Petty & Moore, 2004). Pain has been looked at as a multidirectional experience depending mainly on interplay between three interrelated components namely '(i) sensory dimension (intensity, distribution, quality and behaviour of pain); the affective dimension (emotions associated with pain such as depression, anxiety, fear and anger, and (iii) the cognitive dimension representing the thoughts associated with pain, including present, and past experiences, beliefs about pain and treatment, expectations and coping abilities' (Johnson, 1997; Main & Watson, 1999; Farrar, 2000; Scudds, 2001 in: Conradie, Bester & Crous, 2005, p7).

The experience of pain is influenced by a number of psychological factors including anxiety, fear and mistaken beliefs about the nature of pain and probable outcome to treatment. One example to stipulate this is denoted in the study conducted by Persson & Lilja (2001) which demonstrated that the chronic neck-shoulder arm pain influenced function and mental well-being, including emotional states and coping strategies of patients (Conradie, Bester & Crous, 2005). For this matter, the assessment of pain and the impact on patients' lives continue to remain challenging (Persson & Lilja, 2001). Main and Watson (1999) suggested that in order to overcome the problem a proper biomedical assessment of presenting problems needs to be conducted within a biopsychosocial contextual framework.

2.2.3. Neck Pain

Neck pain (NP) is an irritation arising from any structure in and around the cervical spine, between the superior nuchal line and an imaginary line through the first thoracic vertebra (Bogduk, 1999). It is also a common complaint of patients presenting with a primary complaint in a different body area (Waalén et al., in Vernom, Humphreys & Hagino, 2005),

for example the shoulder (Szeto, Straker & O'Sullivan, 2005), and elbow (Stasinopoulos & Johnson, 2006). Typical NP is usually characterised by restriction of neck movement in certain directions - mostly extension, lateral flexion and rotation towards the painful side (Corrigan & Maitland, 1988). There is no consistency in describing NP (Vernom et al., 2005). Several bodies have distinctively, but closely described NP span to last approximately within the period of 4 weeks during acute phase; 5 to <12 weeks in sub-acute/sub-chronic phase and 12 weeks or above in the chronic phase (Merskey & Bogduk, 1994; Binder, 2005a; Fryer, Alvizatos & Lamaro, 2005).

The incumbent terminology for defining neck and neck-related pain are quite inconsistent. Cervical spondylosis (CS), for example, has been described as one of contributing factors for the development of pain to the neck's nape especially in later age (Mohan, Jayalakshmi, & Meena Devi, 1996). Cervicobrachialgia (CB) has not been regarded by Bogduk (1999) as NP. Fryer et al., (2005) describes brachial pain to be closely associated with the NP episodes. Koes & Hoving (2002) on the other hand, suggests that valid and reproducible diagnostic criteria for a range of terminology to describe NP are inadequate, thus we recognise a range of terminology like "cervical osteoarthritis, occupational cervicobrachial disorder, tension neck syndrome, thoracic outlet syndrome, CS and mechanical ," all of them competing to elucidate the source of the problem in the neck.

2.3. Some aspects of development of NP

NP may originate from mechanical factors (Maitland, 1992; Szeto, Straker & Raine, 2001), specific pathologies as in CB (Hellmann & Stone, 2002) and degenerative joint changes as

in CS (Thomson, Skinner & Piercy, 2001). NP can also arise in circumstances where it is difficult to pinpoint the structure(s) at fault. In this situation, a convenient diagnosis of non-specific neck pain (NSNP) is made (McKenzie, 1990).

The mechanical development of NP may be perpetuated by prolonged static postures and excessive muscle loading (Aarås, Fostervold, Ro et al., 1997; Szeto et al., 2001; Martínez-Segura, Fernández-de-las-Peñas, Ruiz-Sáez et al., 2006). It may as well develop following a disorder in a cervical facet joint (Bogduk, 2002; Corrigan & Maitland, 2003). Winkelstein, Nightingale, Richardson et al., (1999) and Siegmund, Myers, Davis, et al., (2001) suggested that the kinematic characteristics of the cervical spine induce facet capsule stretch and possibly slight ligament ruptures. Thus, the facet capsule may be at risk for painful injury during some neck movements. Szeto et al., (2001) suggests that prolonged forward head postures may be associated with musculoskeletal disorders in a manner that the lower cervical vertebrae flex, the upper extends and shoulders are protracted and elevated. Thus, an increase in compressive loading in the cervical spine and creep response in the tissues results, further worsening the condition. NP may also develop from degenerative changes in the NMA. CS, for example, results from degenerative changes that affect the apophyseal joints and intervertebral joints. In the early stages, there may not be a neurological sign along with the ailment, but later, this may be obvious following the development of osteophytic ridges around intervertebral foramina and the neural canal, which cause compression on the neurovascular contents emerging from respective foraminae (Hellmann & Stone 2002).

Another interesting feature is cervicobrachialgia (CB), which is vaguely described as arising from a large group of intra- and extra-articular disorders, presenting largely with NP limited to the posterior neck region, radiating segmentally to the occiput, anterior chest, shoulder

girdle, arm, forearm and hand (Hellmann & Stone, 2002). However, the provocation of pain in CB follows mechanics of the movement; for example, radiation of pain to the upper extremity can often be aggravated by hyperextension of the neck and lateral flexion towards the affected side.

Generally NP has been closely related with persons of working age (Vogt et al., 2003). A study conducted by Kamwendo, Linton & Moritz (1991), which entailed 79 medical secretaries, demonstrated a significant increase in neck and shoulder pain development over working time. More recently, the study on the classification of shoulder pain identified pain without restriction in range of motion of the shoulder among people of working age to be related with a disorder of a cervicothoracic spine (Groenier, Winters, Van Schuur et al., 2006). Pain in the neck has also been described by Stasinopoulos & Johnson (2006) to demonstrate relationships with lateral elbow tendinopathy, which according to Paolomi, Appleyard & Murrell (2004), is aggravated mainly by racket sport activities and occupational injury as a result of repetitive arm movements.

2.4. Controversies in the management of NP

The management of NP continues to remain controversial, partly due to the fact that there is a lack of high quality research reports to sufficiently recount on the evidence of the efficacy of a range of treatment regimens (Tuttle, 2005). Bogduk (1999) demonstrated failure of the *Quebec Task Force on Whiplash Associated Disorders* to reach a conclusion despite relevant articles they collected from various sources to quantify the evidence that assortments of therapies for NP are viable. Bogduk in Bibby (2006) pointed out that the management of NP continues to pose a challenge since a dearth of evidence continues.

However, Hoppenbrouwers, Eckhardt, Verkerk & Verhagen (2006) report on an increase in scientific studies about the effectiveness of physiotherapy in the management of NP, particularly on reproducible methods of physical examination. This is a signal that, perhaps physiotherapy has more meaning in the treatment of NP despite coexisting discrepancies between various expertise opinions.

2.5. Physiotherapy management of NP

2.5.1. Evidence for use of physiotherapy

Despite contentious arguments on the management of NP several studies show evidence that physiotherapy has beneficial effects on NP (Bogduk 1999, Costello & Jull, 2002, Tuttle, 2005). Evidence is also accumulating to support the effectiveness of physiotherapy interventions for spine disorders (Vendrig, Akkerveen & McWhorter, 2000; Maitland, 2002; Petty & Moore, 2004). Freburger, Carey & Holmes (2005) examined factors influencing physicians' referrals to physiotherapists for the treatment of spine disorders and found on one hand that those presenting with patient-related factors were more likely to be referred to physiotherapists. On the other hand, physicians referred patients whose diagnoses were specific painful conditions. Of these herniated discs, spondyloses and sprains/ strains were commonly referred. However diseases affecting the neural canal like those resulting in compression of the spinal cord were negatively associated with referrals to physical therapists. Despite herniated discs being widely indicated for surgery, physicians refer patients to physiotherapists for conservative treatment prior to surgical consideration.

2.5.2. Selection for the treatment of NP

Perusal of the literature for this study could not retrieve any reports on studies conducted to

determine characteristic selection of physiotherapy regimens in terms of modalities and parameters for NP. The necessity of prescription using all ranges of measures as in medical practice, however, has not been seriously addressed by physiotherapists although there is an increasing signal that the characteristic practice is imperative. This entity is reflected by a few examples in practice like the prescription of an exercise regime, which has been strongly advocated by Lewis (2003: p 246) that:

“Exercise should be adapted to the individual. In the same way that a medication is always prescribed at a named and appropriate dosage, exercise should be clear and have a definite aim and repetitions. ‘Go and exercise!’ is not an acceptable approach.”

Despite increasing awareness on prescriptions for NP in practice, a great deal of contradictions continues to be recognised. Saturno, Medina, Valera et al., (2003), for example, examined the validity and reliability of NP treatment in Spain, and obtained conflicting information on the prescription of various forms of regimens. In this study, inconsistency in the recommendations and obvious contradictions among analysed guidelines were found. Only a few studies, mainly in electrophysical modalities, addressed the issue of treatment parameters whilst therapeutic exercises, therapeutic massage and home programme modalities were lacking information in this regard. More recently, the aspect of treatment parameters has been strongly addressed by Gross, Myers, Goldsmith, et al., (2006) in striving to delineate potent treatment characteristics and standardise reporting of treatment characteristics/dosages and adverse effects of the treatments. Consensus on what choice, frequency, magnitude, duration and treatment length has to be used for the treatment of not

only NP, but also other conditions seen by physiotherapists, however, is still illusive (Van den Ende, Steultjens, Bouter, et al., 2006). Thus, it appears that physiotherapists decide on the treatment parameters with respect to their clinical experiences (Ochs, Singh & Shankar, 2002).

2.5.3. Classification of NP and duration of treatment

The question of how long physiotherapy should continue in order to achieve significant improvement with the treatment of NP remained for considerable a period of time. Consideration for the classification of NP in predicting the amount of treatment necessary for significant improvement has brought about a new perspective in physiotherapy practice (Groenier et al., 2006). The study conducted by Clair, Edmondston & Allison (2004) comprised a total of 92 patients and classified their NP as (i) those with a 'movement disorder' whose pain was mainly aggravated by specific movements, and (ii) those with a 'loading disorder' whose pain was mainly aggravated by sustained postures and positions, but could not suffer movement-related pain. The results following interventions by physiotherapists who were blinded to the classifications, but used physiotherapy regimens they felt to be most appropriate for the intervention of the aforementioned patients showed that those patients with 'loading disorders' are suitably managed within an average of 7 sessions over 39 days, whilst those with 'movement disorders' needed an average of 11 sessions over 57 days to reach significant improvement. Interestingly, these results show that patients with loading disorders require comparatively lesser total duration of treatment than the patients with movement disorders. The choice of regimens, the reasons for the choices, and the pattern of intervention were not discussed in this study.

However, it is clearly portrayed that there is a relationship between classification of NP and duration of the treatment. Duration of treatment has also been described by Wittwer, Goldie, Matyas et al., (2000) to be important, not only in the treatment processes, but also in research. Significant relationship between time factor and recovery has been demonstrated by Kwakkel, Wagenaar, Koelman et al., (1997). Kramer, Steiner, Schlenker et al., (1997); Feys, De Weerd, Selz et al., (1998) and Falla, Jull, Hodges et al., (2005) also described the significance of the time factor in unveiling the outcomes of interventions, further emphasising the need for the classification of the NP prior to considering treatment interventions. Thus, accurate physical assessment prior to the selection of modalities and parameters for the treatment is imperative.

2.5.4. Patients' records

Perhaps one major issue of concern in a journey towards finding “truth” about our ways of treating a disorder is partially thwarted by the existing lack and inconsistency in the quality of records we make for our patients. Proper patient recording through which we can be able to access information on clinical management, resource management, self evaluation, clinical audit, quality assurance research and evaluation is important (Jones, 2005). Deficient recording inclines the practice to weak evidence of the values and therefore causes professional vulnerability to medical-legal aspects.

A study conducted by M'kumbuzi, Amosun & Stewart (2004) to audit physiotherapy patient records retrieved in selected health care facilities in South Africa, demonstrated inconsistencies in record filing, storage and retrieving. Four out of six facilities where this study took place reported to have physiotherapists' notes being kept in an in-patients case

files, whilst two facilities kept physiotherapy in-patient records separately from patient case files. Retrieval of patient records was even much more difficult since some information about the patients were kept as the physiotherapists' own, and others in the hospital records department. This in a way, made it difficult to study trends of physiotherapy management in terms of selected treatment modalities and follow-up. On the rating of completion of assessment, treatment and progress records in the Gauteng Province of South Africa, M'kumbuzi et al., (2004) found an acute shortage of information. Although this study did not focus directly on what was actually written in the patients' case files in terms of interventions and parameters for the treatment, the report showed clearly that there was considerable insufficiency in the reporting.

2.6. Review of modalities used for the treatment of NP

2.6.1. Electrophysical modalities

A survey conducted by Robertson & Spurrirt (1998) reported that at least fifty percent of treatments used in 160 physiotherapy facilities in Australia were complemented by electrophysical agents, mainly TENS, ultrasound and interferential therapy. High trends in the use of these modalities are also seen elsewhere in the world. The vast use of these modalities, however, has for quite some time been questioned as to their effects (Johnson, 1999; Baker, Robertson & Duck, 2001). Their use continue to be advocated, based mainly on anecdotal evidence in the form of descriptive studies, personal experience or expert opinions in the field (Johnson, 1999).

2.6.1.1. TENS

This modality has been in use for the treatment of pain for more than the past 30 years

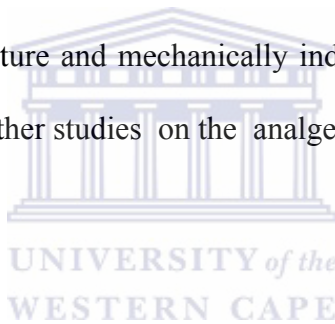
(Chesterton, Foster, Wright et al., 2003). Recently many studies have shown TENS to be effective in LBP (Chesterton, Barlas, Foster et al., 2002). A study conducted by Chiu, Hui-Chan & Cheing (2005) to investigate the effects of TENS in patients with chronic NP found significant reduction of pain that continued to be maintained for a period of six months following six weeks of successive treatment. Despite the findings that TENS is effective the question of effective treatment parameters for it remains illusive (Gopalkrishnan & Sluka, 2000). Reaching a decision as to what are the appropriate parameters for the treatment is influenced not only by diverse nature of pathologies to which this modality is indicated, but also the vast range of stimulation variables including stimulation site, electrode site, pulse pattern and patient preference (Chesterton et al., 2002).

2.6.1.2. Therapeutic Ultrasound

The use of therapeutic ultrasound, although evidence of its efficacy is sparse (Baker et al., 2001) continues to enjoy recognition as a suitable treatment of choice in the management of acute and chronic musculoskeletal conditions (Gam, Warming, Larsen, et al., 1998). In order for this modality of treatment to provide optimal effects, calibration of its intensity output is crucial (Young, 2002). However, there is a possibility that this equipment, widely used in physiotherapy practice, is not regularly calibrated to give a relatively accurate dosage (Rivest, Quirion-de Giardi, Seaborne et al., 1987). The modality also encounters substantial failure in safety test; this could be well linked with ageing of the equipment in many therapeutic settings (Daniel & Rupert, 2002). Another problem with therapeutic ultrasound use is under-dosage, which may return quite striking outcomes; lower dosage, for example, may only provide placebo effect on one hand, and higher dosage might have detrimental effects on the tissues on the other hand (Ochs et al., 2002).

2.6.1.3. Interferential Therapy

The majority of authors claim interferential therapy to have strong analgesic effects compared to other forms of electrical currents (Nikolova, 1987). Interferential therapy has been found suitable for pain relief as it blocks afferent pain signals and triggers the release of endogenous opiates in the mid-brain, which inhibits pain (Thomson et al., 2001). However, the effectiveness of this modality of treatment raises questions since there has not been reported any study of considerable scientific rigour that could sufficiently account on its efficacy (Robertson & Spurrirt, 1998). A study by McManus, Ward & Robertson (2005) reported failure in obtaining information to establish sufficient evidence on the efficacy of interferential therapy in the treatment of pain. However, their study identified hypoalgesic effects with respect to temperature and mechanically induced pain and suggested that these findings could be useful for further studies on the analgesic effects of interferential therapy.



2.6.1.4. Diathermy

This modality is selected in situations where deep heating is needed. It is widely used in the treatment of joint and muscle conditions (Ochs et al., 2002). Two therapeutic effects are brought about by diathermy: (i) *thermal*, which include a rise in tissue temperature and therefore influencing blood flow, resolution of inflammatory process, extensibility of deep collagen tissue, reduction in joint stiffness and relieves deep muscle pain and spasm; and (ii) *non-thermal* effects which are not clearly understood but are believed to exert additional effects to those of thermal effects (Scott, 2002).

Two deep heating modalities namely short-wave diathermy (SWD) and microwave diathermy (MWD) are available in practice. The SWD is equipped with two modes: continuous and intermittent.

Both modes instil similar physiological effects but differ in the intensity of tissue heating: intermittent short-wave diathermy (ISWD) generating less heating than continuous short-wave diathermy (CSWD). The application of intermittent or continuous mode depends mainly on the extent to which the heating is needed and patient's threshold. MWD is also equipped with two modes; continuous and intermittent MWD; together, they produce non-thermal effects of different extents. These include *neural excitability changes* not related to the heating effect and *pearl chain effect*, i.e. alignment of molecules in the tissues. However, this effect is not therapeutically well understood (McMeeken & Stillman, 2002). Evidence of clinical efficacy for the use of these two types of diathermy is lacking since a few reported randomised controlled trials (RCTs) do not describe the effects.

2.6.1.5. Infrared irradiation

Infrared rays are electromagnetic waves emitted from any heat source, with wavelengths between 7,700 to 4,000,000 Angstrom Units. When the infrared rays are absorbed by the superficial tissues of the body, heat is produced. Therapeutically, only the infrared rays of wavelengths between 7,600 to 150,000 Angstrom units are used and are commonly classified into two categories: (i) the long infrared rays - wavelengths 15,000 to 150,000 Angstrom Units, and (ii) the short infrared rays - wavelengths 7,600 to 15,000 Angstrom Units. The long infrared rays, commonly referred to as "infrared" in the physiotherapy departments, are usually produced from non luminous sources whilst short infrared rays are produced from incandescent bulbs, tunnel-bath, or quartz infrared. Infrared provides superficial heating in tissues which can be selected for relieving pain and stiffness, increasing ROM and enhancing

soft tissue healing (Kitchen, 2002). Evidence is demonstrated in the study by Ceccherelli, Altafini, Lo Castro et al., (1989) that infrared irradiation is effective in the reduction of cervical-myofascial pain.

2.6.1.6. Heat and cold

Heat and cold have been used for therapeutic purposes from time immemorial. The effects that have been described under diathermy and infra-red radiation above can be collectively regarded as having been brought about by heat. Conversely cold is based on superficial cooling where vasoconstriction is brought about by cooling effect indirectly on the sympathetic nerve fibres or directly on the blood vessels. Cold therapy is useful in situations where vasoactive substances like histamine circulating in the blood needs to be decreased so as to keep inflammatory response and fluid filtration to the minimum, thus reducing pain and swelling. Cold has shown the ability to retard cytochrome oxidase circulation with which detrimental effects to mitochondria might result had the tissue been subjected to injury (Young & Atherton, 2002). Neuromuscular effects following cooling are well known and have been well documented (Lehmann & de Lateur, 2003).

Unlike deep and superficial heating obtained with the use of diathermy and infra-red radiation respectively, conventional heating can be obtained by the use of hot pads and packs like hydrocollated pads made of hydrophilic silicate gel, moist pads which are immersed in hot water and hydrotherapy. These methods of tissue heating are cheaper and easy to use, especially when the aim is to raise superficial body temperature. Cold can be induced by cold packs, cold baths, vaporising sprays and ice massage. Empirical evidence on the clinical efficacy for the use of cold therapy has been demonstrated (Kraemer, Bush, Wickham et al., 2001; Mac Auley, 2001).

2.6.2. Physical treatments

2.6.2.1. Therapeutic exercises

Therapeutic exercises aim to improve the circulation, elasticity and contractility of the muscles around the neck and to normalise their tone. There is a wealth of evidence on therapeutic exercise programmes in bringing about a meaningful outcome in the management of NP episodes. However, there is a lack of consensus on the prescription of exercises (Falla, 2004). The momentous development of dysfunction around the NMA has been described by Petty & Moore (2004) as a progressive and reciprocal process in that the development of neural tissue dysfunction, for example, would cause a fault in a muscle tissue, which in turn, can cause a joint problem. Conversely can a problem arising from a muscle impair the joint and consequently neural tissue is made faulty. A reduction of strength and endurance of the neck flexors in patients with NP as described by Ylinen et al., (2004), and Falla et al., (2005) can be considered to have followed this cascade of events. Thus, no matter where the problem starts, the end result is weak and painful neck movements. Therapeutic exercises combining a variety of methods including mobilizing exercises, stretching, isometric or isotonic strengthening, endurance training and proprioceptive exercises have shown considerable value in mobilising the NMA (Maitland, Hengeveld, Banks & English,(2002). Several published literature have recommended therapeutic exercises for NP management (Costello & Jull, 2002; Haneline, 2006).

2.6.2.2. Manipulative therapy

One of the exclusive models for the management of spine disorders in physiotherapy practice is the Maitland's Concept (Beeton, 2003). This concept describes treatment protocols using

passive movements which comprise of two techniques namely (i) mobilisation, and (ii) manipulation. Mobilisation includes rapid passive movement that cannot be prevented by the patient whilst manipulation comprises of two: (a) *passive oscillatory movements* of small or large amplitude, with frequency between 2–3 Hertz, applied at any point of the ROM; and (b) *sustained stretches* with or without miniature oscillation amplitudes at the end of the range, which includes *sudden movement* (thrust) of small amplitude at the end of the ROM (Maitland, et al., 2002).

McKenzie (1990) accounts on the conceptual framework of mechanical disorders of the spine where he developed three models – that of (i) ‘posture’ where poor postural habits developing from early life stretches periarticular structures of the spinal joints; (ii) ‘dysfunction’ where the previously stretched structures in later life begins to sustain slight tears along with movements, which on healing, loss of elasticity become obvious, and therefore, affect movement; and (iii) ‘derangement’ where progressive stretching, creep and then hysteresis weaken the mechanism of spine stability and displacement of the joints starts to occur. Mulligan in Exelby (2002) hypothesises that injuries or sprains as has been explained above might result in a slight mal-positioning of the joint. This will cause a restriction of physiological movement of the affected joint. It is with this situation that the role of mobilisation and manipulation is demonstrated by achieving the restoration of intra-articular structures to normal in order to recover a full and pain-free ROM (Maitland, 1992).

Several systematic reviews have been undertaken to advocate for the efficacy of this modality of therapy in the treatment of joint pains. Significant reduction of pain and

restoration of the joints' biomechanical characteristics have been reported (Evans, Bronfort, Nelson et al., 2002; Bronfort, Haas, Evans et al., 2004; Pool, Ostelo, Köke et al., 2005). Tseng, Wang, Chen et al., (2005) pointed out, however, that although effective, not all patients may benefit from this management. They proposed, therefore, that the use of favourable predictors in identifying treatment responders prior to the administration of this type of treatment be considered in order to increase the chances for treatment success. Of the prominent responders, an accurate diagnosis and discrete patient problem identification is imperative prior to consideration of the treatment plan.

2.6.2.3. Cervical traction

Traction has been known for the treatment of the spine from time immemorial. The world recognises Krishna's work (from 3500 BC) in the treatment of hunchback, Hippocrates (from 460 BC) in the treatment of scoliosis and kyphosis, and Galen (from 131 AD) for numerous spine conditions, to be the oldest available literature on traction (Winkenwerder & Shankar, 2002). Cervical traction has been applied by physiotherapists for its pain relieving effect (Yoshimatsu, Nagata, Goto et al., 2001; Constantonyannis, Konstantinou, Kourtopoulos et al., 2002). Very few studies of comparatively high quality have been documented to support the efficacy of cervical traction in treating various forms of neck and neck-related pain (Saunders, 1998). A greater degree of controversy between studies on the efficacy, efficiency and effectiveness of traction exists - some commending it whilst others are not of the opinion that the use of traction can bring about a meaningful outcome. Saunders (1998) critically analysed "the clinical guidelines for the management of acute low back pain," and pointed out some faults in the RCTs used to reach a conclusion. Based mainly on three reports - the Quebec Taskforce on Spinal Disorders (QTF, 1987); acute low back problems in adults (US

DHHS, 1994); and a review by Van der Heijden, Beurskens, Koes et al., (1995), the guideline dully stipulated that traction does not appear to be effective in the treatment of low back pain and radiculopathy. Saunders further argues that the studies did not assert on statistical significance, hence, it was illogical to reach the conclusion that traction was ineffective. Over and above, Saunders argues that the use of a considerable number of inconsistent techniques in the studies obviously influenced the outcome.

A study conducted by Yoshimatsu et al., (2001) suggested that cervical traction is effective in relieving pain resulting from spondyloitic myelopathy. Constantonyannis et al., (2002) on the other hand, recommends the use of intermittent cervical traction in the treatment of herniated disk, but not in myelopathic conditions and/or any progressive neurological deficit. This study signifies that perhaps poor diagnosis could as well perpetuate inconsistency in reaching a conclusion on the efficacy of traction.

The review by Harte, Baxter & Gracey (2003) accounted on a total of only 4 high quality studies done during a period between 1995 and 2002. Disappointingly, they did not find new explanations on cervical traction. Failure in obtaining distinctive descriptions about the efficacy and effectiveness of traction has been explained by Saunders (1998) to be an aftermath of poor methodological quality, which, in turn, results in a continuing diverse outlook upon the efficacy of this modality.

2.6.2.4. Therapeutic massage

Therapeutic massage has been claimed by many physiotherapy bodies to have musculoskeletal pain relieving effect (Pesco, Chosa, Tajima, 2006). However, in their systematic review, Lewis & Johnson (2006) identified relatively few literature of required

quality to sufficiently reach a conclusion on the effectiveness of therapeutic massage. In their study, data on the number and type of patients treated, duration of study, type of massage, control group, concomitant interventions, pain outcomes and conclusion of the authors, were analysed to reach the conclusion that the efficacy of therapeutic massage continues to remain debatable, partly because of the on-going absence of a well structured studies. Gross et al., (2006) also argued systematically that the question of effectiveness of therapeutic massage is unanswered, and suggested more pilot studies to be structured to characterise therapeutic massage not only on effectiveness, but also on its respective parameters which should be considered for bringing about meaningful therapeutic outcomes.

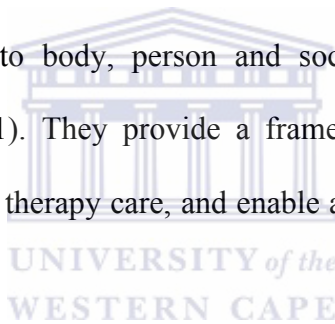
2.6.3. Combination of modalities

Despite controversial perspectives on the evidence of the efficacy of the modalities used for NP treatment, the anecdotal practice of combining various modalities to form therapy regimes has been reported to demonstrate good outcomes. A study by Clair et al., (2004) showed effectiveness in the combination of different modalities for treatment regimens. The significant effect of the combination of therapeutic regimens has also been demonstrated by Mohseni-Bandpei & Critchley (2006) in the management of low back pain where combinations of therapeutic exercises and manipulations showed good outcomes. Therapeutic exercises in the treatment of NP has also been commended by Pesco et al., (2006) to be effective in reducing upper back and NP. Patients are generally more satisfied especially when it is combined with spinal manipulative therapy (Haneline, 2006) However, the use of electrophysical modalities in the treatment regimens continues to be debatable (Laasko, Robertson & Chipchase, 2002). Mohseni-Bandpei & Critchley (2006), for example,

found the combination of electrotherapeutic and manipulative therapy to be better than that of therapeutic exercises and ultrasound. Vernon et al., (2005) on the other hand, reported on limited evidence of the benefit of spinal manipulation and TENS in the treatment of the NP. Van der Windt (1999) found no evidence to support the use of ultrasound therapy alone or in combination with therapeutic exercises for musculoskeletal disorders.

2.7. The perspective of outcomes

The concept of measuring the outcome of clinical interventions has been described by Barnard & Hartigan (1998, p70) as “an audit undertaken to assure clinicians, their managers and/or commissioners that their interventions are timely, appropriate and effective.” These reflect outcomes appropriate to body, person and society (Gary, & Hendershot, 2000; Melvin, 2001; Stineman, 2001). They provide a framework for assessing the needs and expectations of stakeholders in therapy care, and enable an appropriate choice of measure of outcome that reflect this.



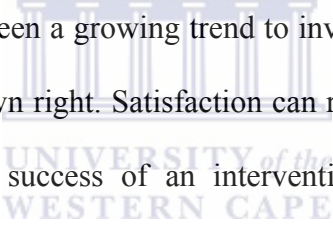
Herbert, Jamtvedt, Mead & Hagen (2005) accounted on the physiotherapist’s practice as being mostly based on observation, which is accumulated over time. The accumulated information is then analysed (Sparkes, 2005) to come up with “practice knowledge” (Higgs, Titchen & Neville, 2001). It is this practice knowledge that determines the treatment profiles that should lately be measured in terms of the outcome.

Traditionally, physiotherapists have measured the outcome of their interventions in terms of change in impairments (signs and symptoms). Patients mostly measure the outcomes in terms of their immediate problems, and their ability to accomplish tasks that they value within their environment (Lloyd-Smith, 1997; Cole, 2001; Grimmer & Bowman, 2001).

This complexity of perspectives on the perceived meaning of outcome has been addressed by Wright (1999) and Beaton (2000) by reporting little support in the literature for a strong relationship between impairment measures (usually those of physiotherapists) and change in ability (those of patients).

In practice physiotherapists and patients usually exercise an immediate time frame for outcome assessment. The outcome assessment, therefore, tends to be centred on a short term qualitative basis, for example patient's feelings compared to an hour ago; this morning and the last day's morning etc. (Bialocerkowski, 2002). However, Conradie, Bester & Crous (2005) suggests that pain experience which is frequently used as an outcome measure should be measured quantitatively, although, unfortunately the quantitiveness of the measure would only reflect the individual's subjective nociceptive experience. Improvement of the condition on this perspective, over certain period of time, by a certain intervention may be interpreted as effective. Similarly, for the patient who had not improved over a certain period of time, it might be concluded that the intervention was not effective. This sounds to be the simplest way of interpreting the outcome of the intervention. However, Herbert et al., (2005) warns that the conclusion is attractive, but it might be incorrect since there may be factors other than interventions necessary for the determination of the outcomes. These are for, example, the self-limiting nature of the NP episode without or with ineffective intervention (McKenzie, 1990; Maitland 2002; Petty & Moore 2004).

Various bodies have recommended that where possible physiotherapists should use pre-existing validated health measurement scales as outcome measures since they seem to have a measure of validity and reliability. This suggestion may sound appropriate in conjoining the perspectives of the management. But in practice, traditional reporting of subjective evaluation of treatment outcomes, like reduction in pain (Hedley et al, 2005; Haneline, 2006) without using visual analogue scales (Palmgren, Peter, Sanström, 2005); others like increase in range of motion without measuring and comparing with the baseline measurements; regaining functional activities without rationally evaluating the functions and return to work has been anecdotally continued to be practised.



Over a few decades there has been a growing trend to investigate the value of satisfaction as a measure of outcome on its own right. Satisfaction can reflect the quality of healthcare that “provides information on the success of an intervention in terms of meeting patients’ expectations, which complements the requirement for patient centred care” (Taylor, Ellis, Morris Gallagher, 2002, p 645). Since it is based mainly on observations, the measurement of satisfaction level, particularly in physiotherapy practice, could give a handful of useful information in the measuring of treatment outcomes. However, the way physiotherapists assess patient satisfaction may not be recognised since it needs to be probed by using a validated qualitative instrument and not only by listening to the experience from the patient, as has been traditionally done. Despite usable information that could be gathered by this model of assessment several shortcomings may result.

2.8. Summary

This chapter has highlighted some aspects of NP and the evidence related to its physiotherapeutic management with regard to the research question of this study. The review of modalities used by physiotherapists in the treatment of the NP has been done within the theoretical perspective of evidence-based practice. The issue of treatment outcomes has also been highlighted here in order to shed light on the discussion that shall be featured in chapter 5. Despite turmoil in efforts to register sufficient knowledge about not only the NP itself, but also the treatment, physiotherapists are confronted by a number of questions to answer as available literature “convinces” the audience that perhaps physical remedies are much more meaningful in the management of the ailment than medical remedies.



CHAPTER THREE

METHODOLOGY

3.1. Introduction

This chapter describes the justification for the selected research method. It describes the research design, population sampling method, data collection method, data capturing instrument and procedure. The data analysis is also explained and finally, the ethical considerations relating to the study are stated.

3.2. Research Setting

This study was conducted at the MOI, an orthopaedic specialty hospital, which is situated in Dar es Salaam, Tanzania. MOI is situated on the same premises with the oldest and largest hospital in the country, the Muhimbili National Hospital (MNH). The physiotherapy department of the MOI at the period of data collection consisted of 10 physiotherapists. Hospital statistics for 2004 shows that the physiotherapy department had attended to 11520 out-patients of whom, 1026 patients were recorded as having various forms of NP episodes. The institution also caters for in-patients, having bed capacity of 87. The average number of in-patients treated by physiotherapist in the year (2004) was 4020.

3.3. Research Design

A non-experimental retrospective study using exploratory research design utilising a quantitative research method was chosen. According to Bless & Higston-Smith (2000) this

design suits an aim to gain insight into a situation phenomenon, community or individual. The need for such studies usually arises from a lack of basic information on a new area of interest (Fouché & De Vos, 2005). Since this area of physiotherapy practice has not been researched in Tanzania, the design was considered appropriate by the researcher to meet the objectives of the study. Exploratory research has been described by Neuman (2000) as a first stage in a sequence of studies, which is directed to answer to the question “what”.

3.4. Study population

The study population was people who suffered NP and were referred for physiotherapy at the MOI.

3.5. Sample size

The records of all patients with NP referred to the physiotherapy department between 2nd January and 30th June 2004 were considered for the study, conditional to the inclusion criteria. At the outset and based on the MOI physiotherapy department’s monthly statistics, it was estimated to yield approximately 400 patients records. The researcher obtained a total of 364 suitable records for the purpose. This is equivalent to 91 percent of the estimated number of records during the study period. The inclusion and exclusion criteria are set out below.

3.5.1. Inclusion criteria

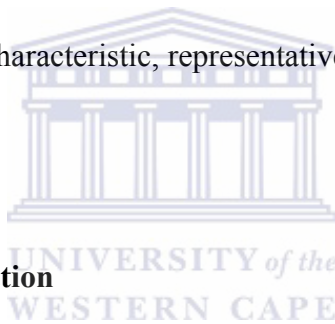
Complete patients’ records: These were the records which contained pertinent information about investigation, diagnosis, date of commencement of therapy, documentation as therapy progressed and choice of treatment techniques/modalities.

3.5.2. Exclusion criteria

- Serious pathologies such as fractures, spinal cord injuries, tumours and infections, for example tuberculosis of the spine;
- All records which did not contain information described above, and
- Records indicating that the patient attended the treatment session only once.

3.6. Sampling method

The researcher employed a purposive sampling method for obtaining patients' records. According to Strydom (2005) a purposive sampling method is used in situations where the type of sample to be used in a study depends entirely on the researcher's decision upon elements that enfold the most characteristic, representative or typical trait of the population to be studied.



3.7. Method of Data Collection

The study utilised the quantitative method of data collection. A data capture sheet was developed by the researcher to collect information from the sampled patients' records on neck and neck-related pain. This instrument consisted of five sections: (i) *Patient demography*, which included age, gender and occupation; (ii) *profile of the NP episode*, which included symptoms that may accompany neck episodes (these were headache, back, shoulder and arm pains), investigations and diagnoses; (iii) *profile of treatment*: which included date of commencement and frequency of treatment, length of the treatment course and date the patient was discharged from treatment; (iv) *selected physiotherapy interventions*, such as therapeutic exercises, electrophysical agents, cold and hot packs, massage and

cervical traction and (v) *outcome documentation*, which included documented effects of treatment, progress of the patient and indicators which were used for discharging the patient. Despite a quantitative method being used, the researcher also observed how the patient information was recorded by the physiotherapists in terms of consistency and clarity.

3.8. Validity and reliability of the study instrument

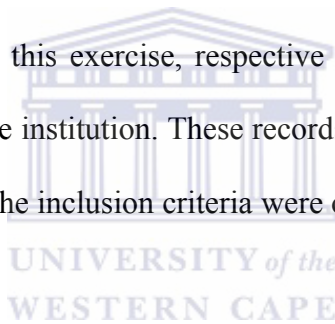
Validity establishes the extent to which an instrument measures what it is supposed to be measuring whilst reliability establishes whether two administrations of an instrument produce the same results (Sarantakos, 2000). Therefore, to ensure the validity of the data capture sheet developed by a researcher of this study, copies of instrument were disseminated to three peers of the School of Physiotherapy at K.C.M.C, Moshi, for reviewing and advising (appendix iia). These persons met to discuss about the instrument and finally they reached consensus on how the instrument should look like, viz: what information the instrument should collect.

Reliability of the instrument was established by a pilot study. Twenty case files of NP patients who attended treatment at the physiotherapy department of the MOI during study period (between 2nd January and 30th June 2004) were selected. These case files were reviewed by one physiotherapist at the MOI (appendix iib) to ensure that they met the inclusion criteria as mentioned under 3.5.1 above. The data were then extracted from the files by a peer at the MOI (appendix iic). This was followed by the researcher extracting data from the same files and finally comparison between the extractions of the two, namely the peer and the researcher was made. The researcher then analysed the data and found 92% of

the similarity between the two sets of data collected. The results of the data extraction ascertained that the instrument was reliable for the exercise. The results were also included in the main study since the case files came from within the period of the study.

3.9. Procedure

Initially all records of patients suffering from neck and neck-related pain identified between 2nd January to 30th June 2004 were extracted from the physiotherapy department's patient register. Each record was counted as one patient and therefore, entered only once on the list. Thus, no matter how many times the patient was required to return for a follow-up treatment or following a recurrent attack of NP, it was not counted as a new entry. A total of 439 records were listed. Following this exercise, respective case files were requested from the health records department of the institution. These records were scanned for completeness. A total of 364 case files that met the inclusion criteria were obtained for the study.



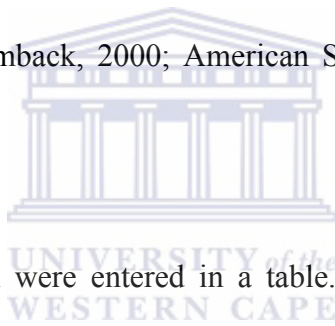
3.10. Data capturing

The Statistical Package for Social Sciences (SPSS) version 13 software was used for capturing the data. All nominal data were coded numerically and continuous data were captured in terms of their values; age of patients and duration of treatment in terms of time taken for an intervention in each modality and length of course of the treatment were entered according to their numerical values.

3.11. Data analysis

Descriptive statistical analyses were carried out on the data. The demographic description of

the study population was processed by using frequency tables and figures. Since patient records were the key source of information in the process of answering the research question, investigation of the characteristic recording of therapy information in patients' case files, department's records and physiotherapists' own patient records was also done. A retrospective study was used since it is cheaper and provides an avenue to examining multiple outcome variables over a relatively short period of time. However, the value of this type of study is dependent mainly upon the reliability of old records. There is also the risk of investigator bias due to possible influences, mostly subconsciously by the researchers, who might know which records are likely to be suitable for the study. Another weakness of a retrospective study can be a limit to responses for the amount of data that can be collected on one occasion (Weinberg & Umbach, 2000; American Society for Reproductive Medicine, 2005).



The results of the observation were entered in a table. The distribution of the diagnoses against age was plotted in a histogram. A curve was fitted to determine the extent to which age of the study sample lies within the normal distribution. The diagnoses were analysed through frequency tables and figures to obtain the distribution of diagnoses against gender, and age groups. Prior to the analysis of the data the ages in the sample were grouped into three groups, viz: the young age group (26–34 years); middle age group (35–54) and older age group (55 years and above).

3.12. Ethical Consideration

Approval for the study was obtained from the Senate Higher Degrees Committee and the

Research Committee of the University of the Western Cape before the study commenced. Verbal permission was obtained from the MOI after the Director Human Resource Development of the Ministry of Health endorsed the application. All information pertaining to the study was handled confidentially and anonymously. Each patient record was given a number. Thus, no patients' names were used in the whole research process.

3.13. Summary

In this chapter the researcher explained the methodology used in the study. It highlighted the advantages and disadvantages of the selected research design. In the next chapter results of the study are described and interpreted.



CHAPTER FOUR

RESULTS

4.1. Introduction

In this chapter the results of this study shall be presented and described with the aid of tables and figures. Descriptive and inferential statistical analyses were carried out on the data. The Kruskal-Wallis and Chi square tests determined at a p-value of 0.05 were used in the inferential statistical analyses.

4.2. Demographic characteristics of the study sample

Four hundred and thirty nine (439) patient records were retrieved, of which 364 met the inclusion criteria for the study. These were records of patients who attended the physiotherapy department between 2nd January and 30th June 2004, which is equivalent to 82.92% of the total number of records identified for the study

4.2.1. Gender distribution

Table 4.1 shows the gender distribution of patients who presented with NP. The number of females in the sample was more than double the number of males.

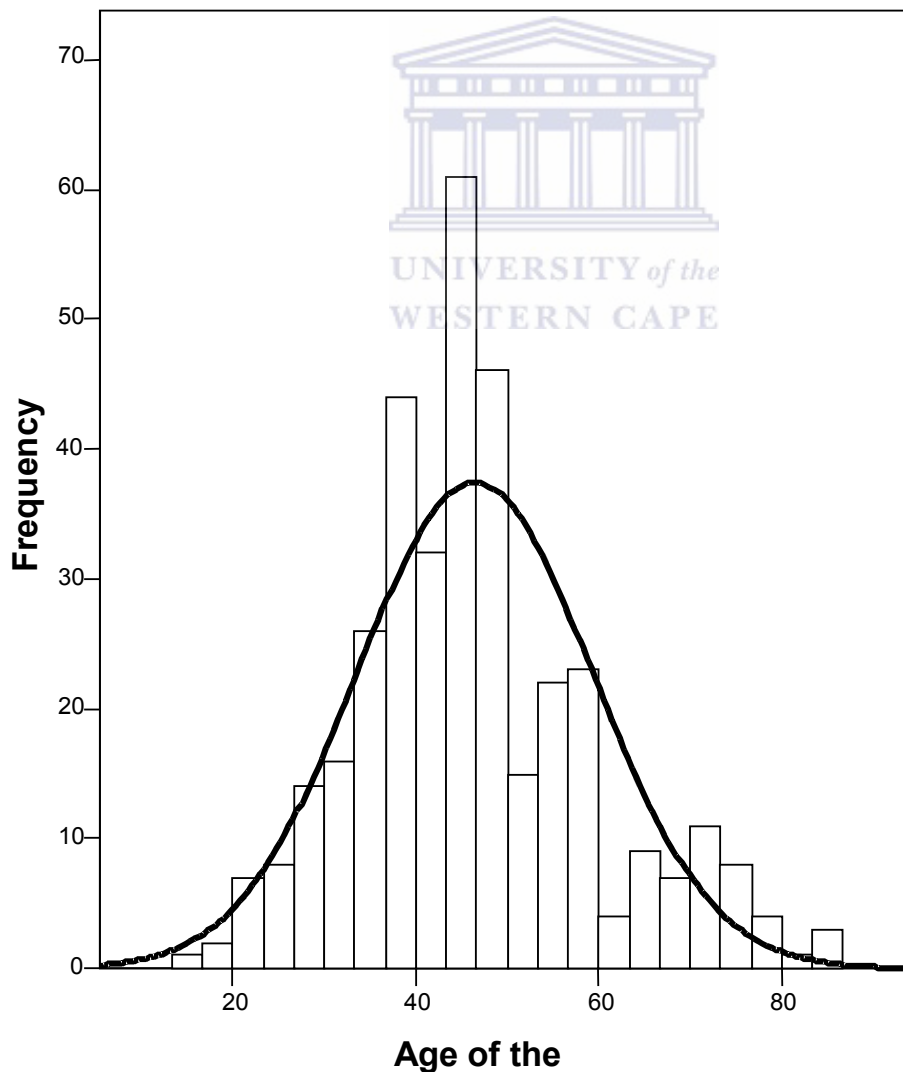
Table 4.1. Distribution of gender of the study sample ($n = 364$)

Variable	Characteristic	Frequency	% of total records
Gender	Females	247	67.86
	Males	117	32.14
Total		364	100

4.2.2. Age distribution

The average age of the study sample was 46.42 years (SD = 12.94), ranging from 16 to 78 years. Most of the patients were of the middle-age group; patients of 46 years of age constituted the largest proportion in the data. The summary of the age distribution of the study sample is shown in Figure 4.1. The age distribution demonstrates a normal bell-shaped curve.

Figure 4.1. Distribution of age of study sample ($n = 364$)



4.2.3. Occupation of the study sample

None of the 439 records studied accounted on the occupation category despite space provided in a patient's case file. It was not possible, therefore, to analyse disease process with respect to this very important category.

4.3. Profile of diagnostic categories in NP

Three major diagnostic categories in NP were made by the referring MOs. These were cervical spondylosis (CS), cervico-brachialgia (CB) and non-specific neck pain (NSNP).

4.3.1. Gender and distribution of NP

Table 4.2 shows that, of the 364 records, the majority of patients (174; 47.8%) was diagnosed to have suffered from NSNP. In all three diagnostic categories more females were affected than males.

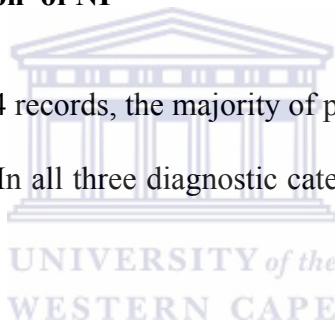


Table 4.2. Distribution of the NP episodes ($n = 364$)

Diagnosis	Gender				Total	
	Frequency	%	Frequency	%	Frequency	%
CS	47	12.91	18	4.95	65	17.86
CB	86	23.63	39	10.71	125	34.34
NSNP	114	31.32	60	16.48	174	47.80
Total	247	67.86	117	32.14	364	100.00

The episodes were also associated with other forms of pain distal to the neck. CS was significantly related with arm and back pain. However, there was no significant relationship with the history of headache in patients who reported to suffer from this category of pain. CB, on the other hand, did not show a significant relationship with histories of headache ($\chi^2 = 0.190$; $p = 0.663$) and back pain ($\chi^2 = 1.212$; $p = 0.271$). Statistically significant relationships were found between NSNP and histories of arm and back pains. Histories of shoulder and headache along with NSNP were also reported, but they were not significantly related.

Although females were more prevalent in the sample of patients referred to the department for treatment, the percentage suffering within gender showed that more males suffered from NSNP than females (Table 4.3). In CS and CB, females suffered more although the difference between the two genders under CB was marginal.

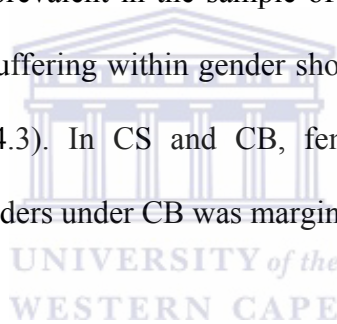


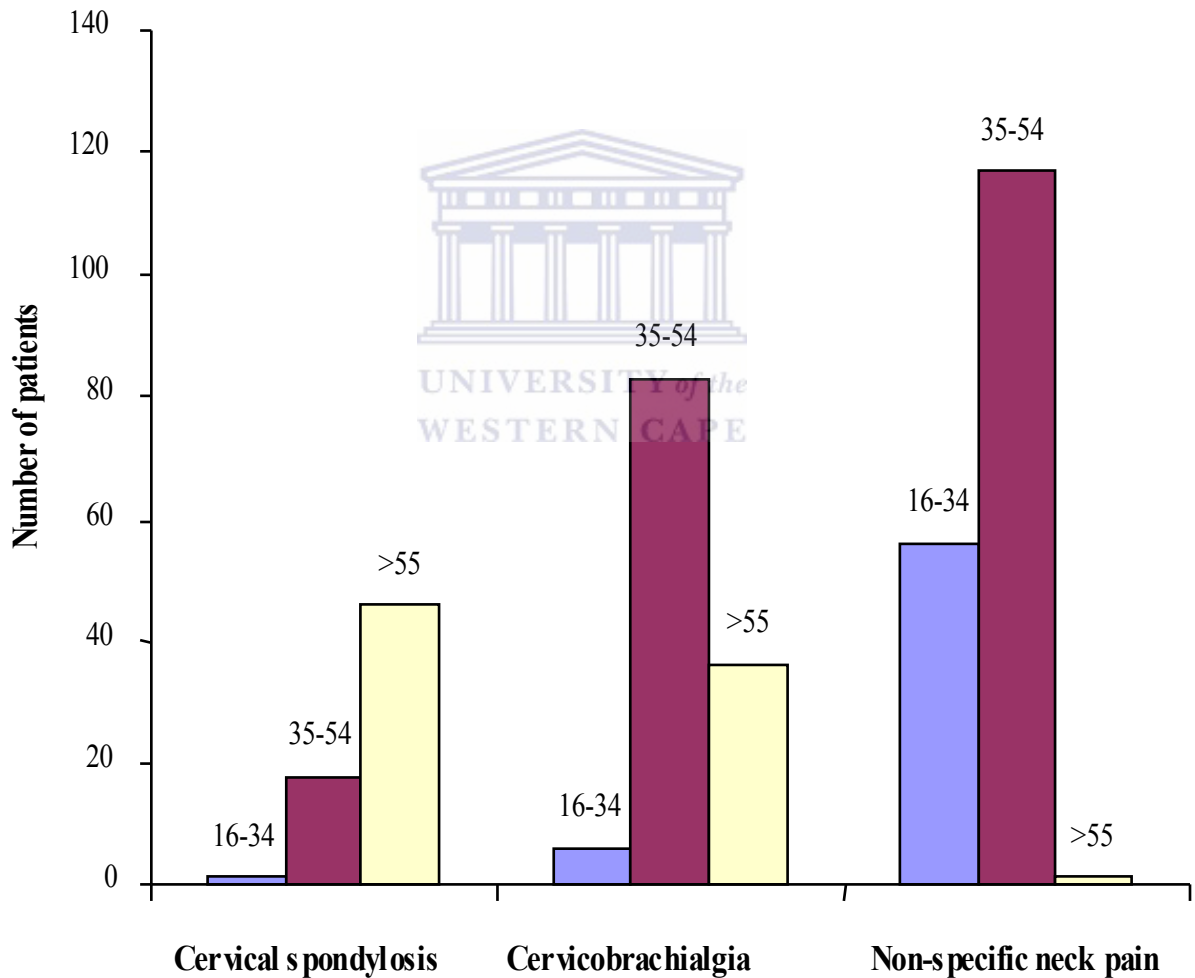
Table 4.3. Diagnostic categories within gender

	Gender of patient		
	Female	Male	Total
CS			
Count	47	18	65
Expected Count	44.1	20.9	65.0
% within diagnosis	72.3%	27.7%	100.0%
% within gender of the patient	19.0%	15.4%	17.9%
% of Total	12.9%	4.9%	17.9%
CB			
Count	86	39	125
Expected Count	84.8	40.2	125.0
% within diagnosis	68.8%	31.2%	100.0%
% within gender of the patient	34.8%	33.3%	34.3%
% of Total	23.6%	10.7%	34.3%
NSNP			
Count	114	60	174
Expected Count	118.1	55.9	174.0
% within diagnosis	65.5%	34.5%	100.0%
% within gender of the patient	46.2%	51.3%	47.8%
% of Total	31.3%	16.5%	47.8%
Total			
Count	247	117	364
Expected Count	247.0%	117.0	364.0
% within diagnosis	67.9%	32.1%	100.0%
% within gender of the patient	100.0%	100.0%	100.0%
% of Total	67.9%	32.1%	100.0%

4.3.2. Prevalence of NP episodes among age groups

A relatively large number of patients in the middle age group (35–54 years old) were identified as suffering more from NSNP than CB and CS respectively. Only one patient in the older age group suffered from NSNP and only one of young-age group was diagnosed to have suffered from CS.

Figure 4.2. Distribution of NP episodes among age groups



4.3.3. Radiographic investigations

A total of 118 (32.42%) patients underwent diagnostic radiographic investigations requested by a referring MO. Of these, only plain radiographic investigations were requested. The chi-square statistic showed a highly statistical significant relationship between radiographic investigations and diagnoses ($\chi^2=49.126$; $p = 0.000$).

4.4. Physiotherapy management of the NP in the study sample

The study identified trends in the interventions selected for the treatment of NP by the physiotherapists at the MOI. The following were found:

4.4.1. Selected modalities for interventions

Table 4.4 below shows that a total of 9 different modalities were used for the treatment of NP episodes. Therapeutic exercises was the most frequently selected modality. This was followed by therapeutic ultrasound, cervical traction and massage. TENS, hot packs, cold packs, interferential therapy and collar were the least used modalities.

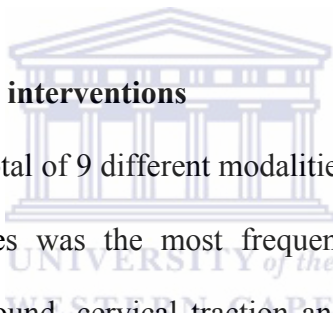


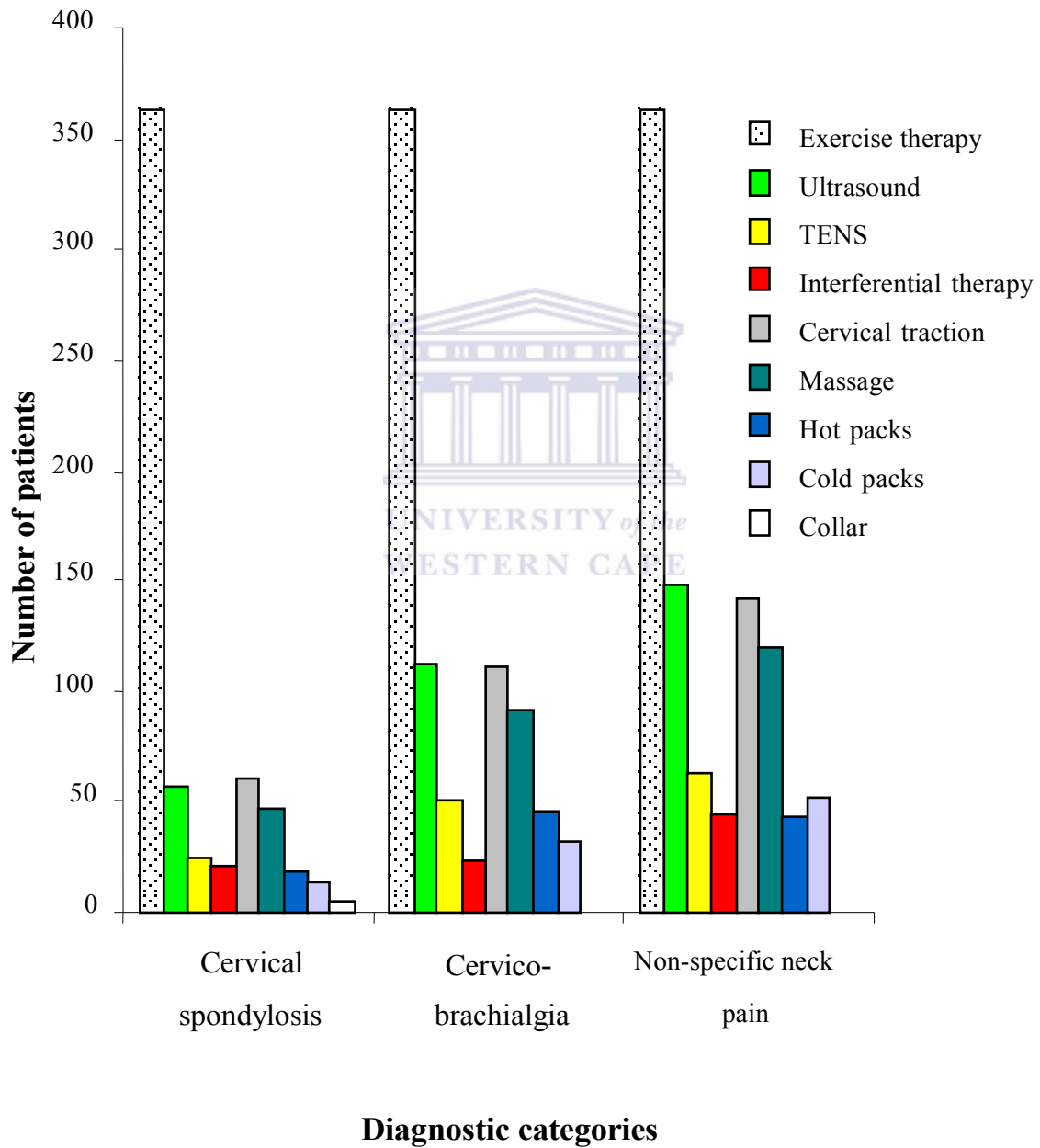
Table 4.4. Percentage distribution of modalities used for the interventions (n = 364)

Modality used for the intervention	N^o. of patients treated	% distribution
Therapeutic exercises	364	100
Therapeutic ultrasound	318	87
Cervical traction	314	86
Massage	259	71
TENS	140	38
Hot packs	108	30
Cold packs	98	27
Interferential therapy	88	24
Collar	4	1



Figure 4.3 portrays the distribution of modalities with respect to the diagnostic categories. It shows that collars were used only for patients with CS.

Figure 4.3. Distribution of modalities among diagnostic categories



Further analyses of the diagnostic categories revealed no statistically significant relationship between the modalities chosen for the intervention in the CS cohort (Table 4.5). Table 4.6 shows a statistically significant relationship between CB and hot packs ($p < 0.05$). Hot packs and cervical traction were also statistically significant in relation to NSNP (Table 4.7). Although these modalities were statistically significant they may not imply clinical significance.

Table 4.5. Distribution of modalities within CS (n = 364)

Modality	N^o. patients treated	χ^2	<i>p</i>-Value
Therapeutic ultrasound	57	0.08	0.930
TENS	26	0.79	0.778
Interferential therapy	21	2.855	.910
Cervical traction	60	2.439	0.118
Massage	47	0.51	0.821
Hot pack	19	0.07	0.932
Cold pack	15	0.595	0.441
Collar	4	-	-

Table 4.6. Distribution of modalities within CB (n = 364)

Modality	N^o. patients treated	χ^2	p-Value
Therapeutic ultrasound	113	1.591	0.207
TENS	51	0.440	0.507
Interferential therapy	23	3.465	0.063
Cervical traction	111	1.033	0.309
Massage	92	0.555	0.456
Hot packs	46	4.638	0.031*
Cold packs	31	0.436	0.509
Collar	0	-	-

• *Significant (p<0.05)*

•



Table 4.7. Distribution of modalities within NSNP (n = 364)

Modality	N^o patients treated	χ^2	<i>p</i>-Value
Therapeutic ultrasound	148	1.604	0.205
TENS	63	0.716	0.397
Interferential therapy	44	0.225	0.636
Cervical traction	143	4.683	0.030*
Massage	120	0.778	0.378
Hot packs	43	3.926	0.048*
Cold packs	52	1.486	0.223
Collar	0	-	-

* *Significant (p<0.05)*

4.4.2. Combination of modalities

The nine different modalities identified above were combined to form a total of 22 different combinations for treatment of CS, 26 for CB and 35 for NSNP (Figures 4.4 to 4.6). Possible reasons for this great variation in combinations of modalities might have arisen from either uncertainty in the physiotherapists' choice of treatment modalities, ineffective treatment or changing treatment too soon.



Figure 4.4. Distribution of modality combinations for the treatment of NP in CS (n= 65)

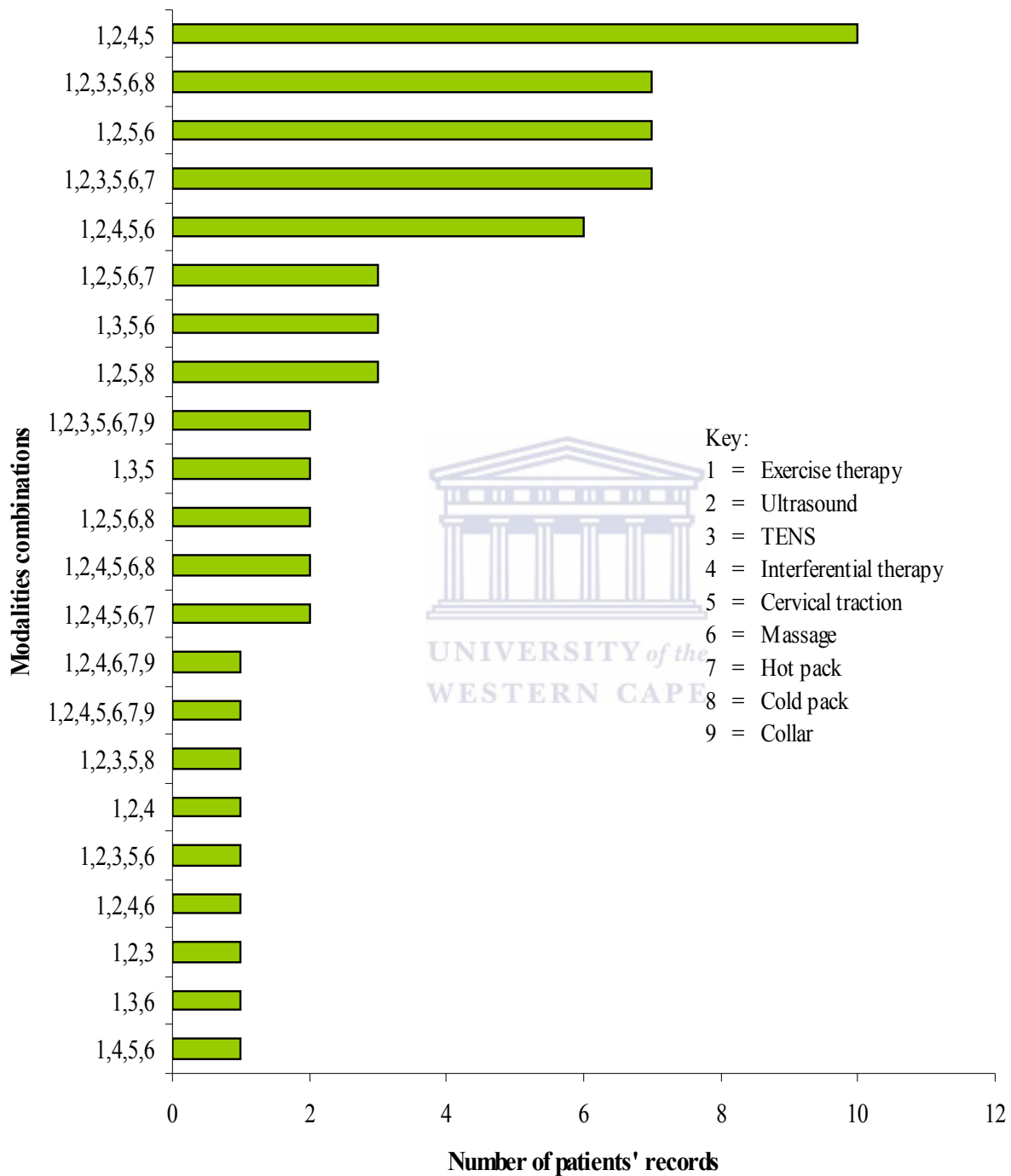


Figure 4.5. Distribution of modality combinations for the treatment of NP in CB (n = 125)

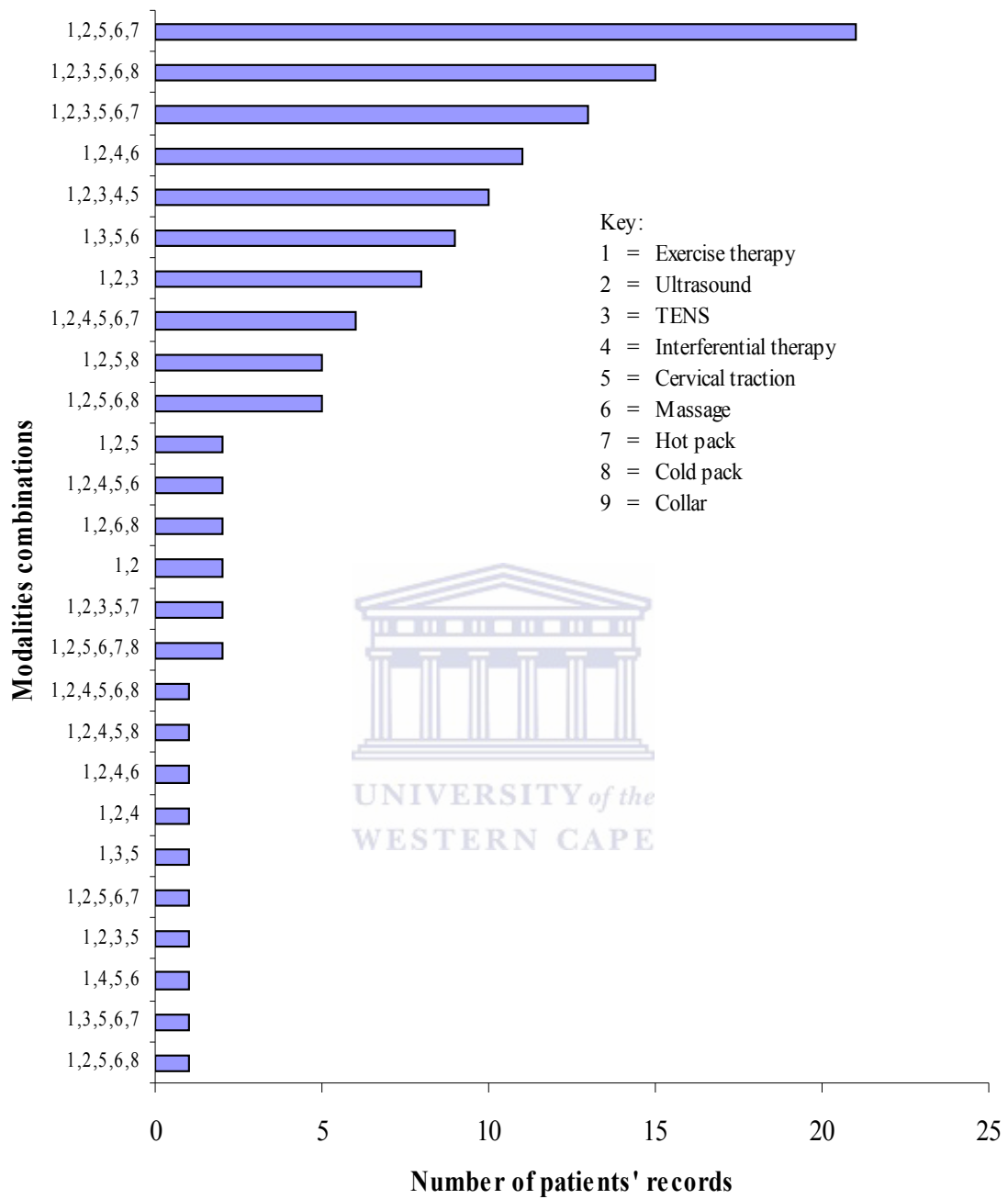
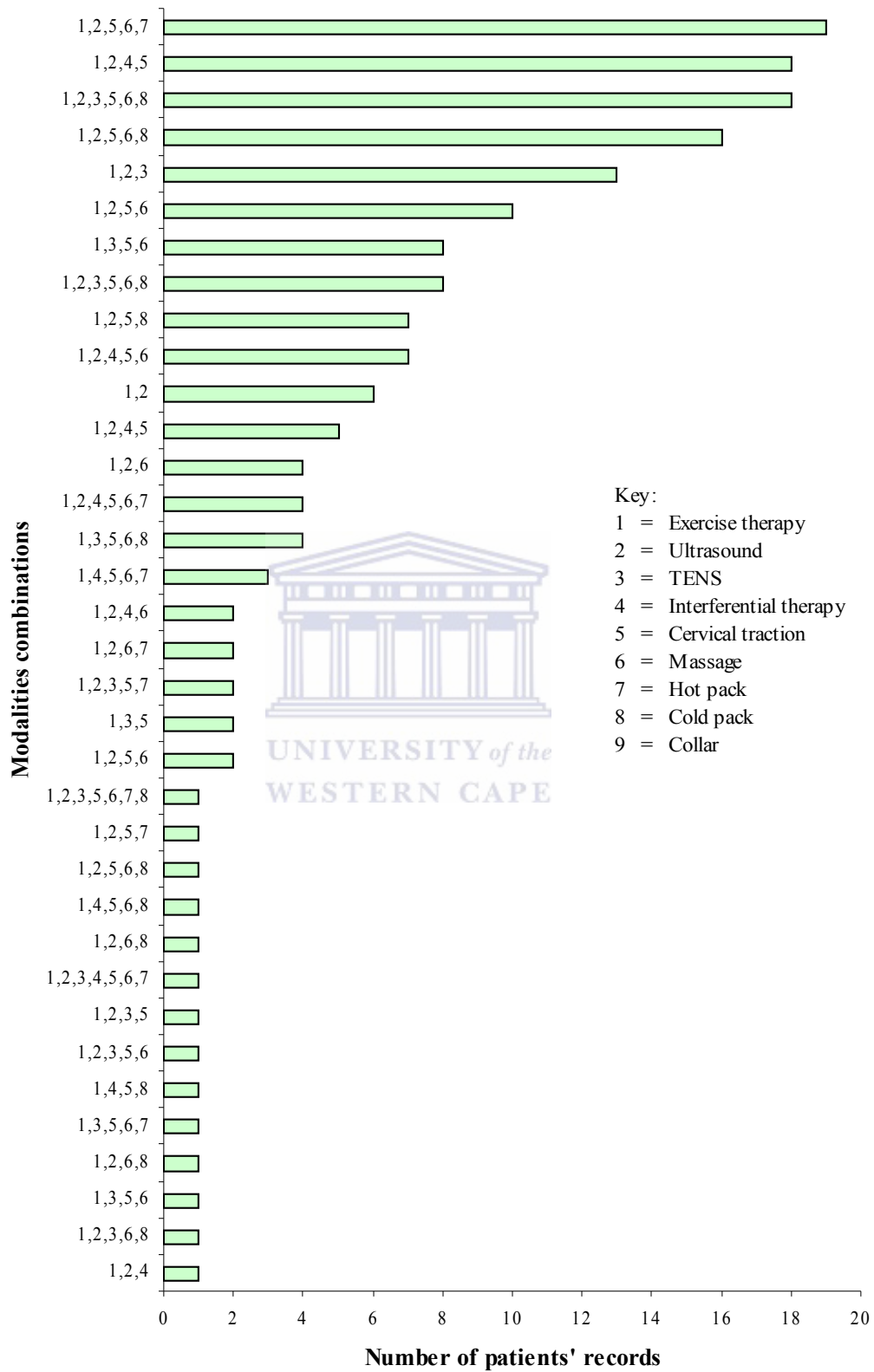


Figure 4.6. Distribution of modality combinations for the treatment of NP in NSNP (n = 174)



4.4.3. Distribution of attendance of patients

Most of the patients attended for a period of ≤ 6 consecutive weeks whilst a relatively small number attended for > 6 weeks (table 4.8). Of these patients, most of them were scheduled for a follow-up attendance of two times per week (table 4.9).

Table 4.8. Total duration of treatment in weeks

N ^o . of weeks	N ^o . of records	%	Cumulative %
2	35	9.6	9.6
3	68	18.7	28.3
4	41	11.3	39.6
5	33	9.1	48.7
6	91	25.0	73.7
7	26	7.1	80.8
8	15	4.1	84.9
9	7	1.9	86.8
10	6	1.6	88.4
11	4	1.1	89.5
12	24	6.6	96.1
13	5	1.4	97.5
14	4	1.1	98.6
15	2	0.5	99.1
16	2	0.5	99.6
18	1	0.4	100.0
Total	364	100.0	100.0

Table 4.9. Number of treatment sessions per week

N^o of treatments/week	N^o of patients	Percent
1	108	29.70
2	201	55.20
3	54	14.80
4	1	0.03
Total	364	100.00

4.4.4. Duration of treatment per modality

The duration of treatment for most of the modalities was between 5 and 15 minutes. However, for therapeutic exercises and massage no treatment time was recorded. Similarly, the period for wearing the collar was also not reported (Table 4.10).

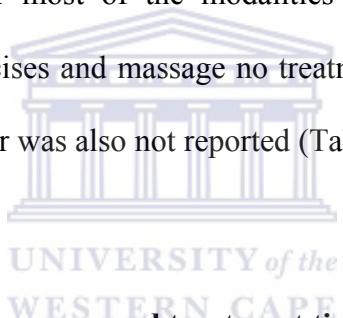


Table 4.10. Distribution of frequency and treatment time (minutes) per modality

	Durations						Not known	Total
	min s	n	min s	n	min s	N		
Therapeutic exercises	-	-	-	-	-	-	364	364
Therapeutic ultrasound	5	63	8	1	10	217	37	318
Cervical Traction	10	98	15	171	-	-	45	314
Massage	-	-	-	-	-	-	259	259
TENS	10	97	15	39	-	-	4	140
Hot packs								
Interferential therapy	6	1	10	58	15	10	19	88
Cold packs	10	4	-	-	-	-	94	98
Collar	-	-	-	-	-	-	-	4

4.4.5. Number of sessions per week and duration of attendance

The analysis revealed negative correlation between frequency of follow-up attendance and length of course of treatment. Those who had more visits per week attended physiotherapy for a shorter course of treatment. However, comparisons of the means revealed negligible differences between the groups of patients who attended the treatment once, twice or three times per week (table 4.11). The one patient who attended four times a week was excluded from the analysis in order to obtain a rather stacked picture of relationship between substantial amounts of data collected.

Table 4.11. Comparison of means between frequency of treatment per week and number of treatment weeks

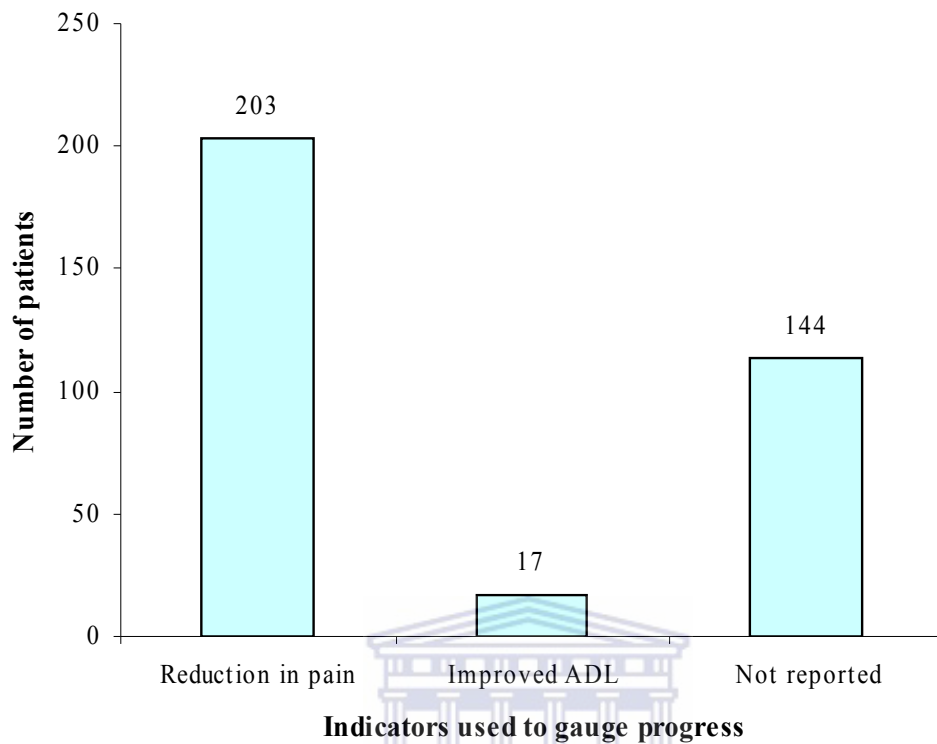
Number of interventions/week	Mean	N	Std. Deviation
1	6.10	108	4.032
2	5.73	201	2.598
3	5.28	54	2.798

In addition, the Kruskal-Wallis test was further done and found no statistically significant relationship between the number of times patients were scheduled to come for treatment per week and the length of the course of treatment in weeks ($\chi^2 = 2.51; p = 0.285$).

4.5. Documented interventions and the outcome

‘Reduction in pain’ as an indicator to monitor the progress of the patient occupied large portion of the study sample (203, 55.77%). On the other hand ‘improved ADL was documented in a small number of records (17, 4.67%). Of concern is the large number of records, (144, 39.56%) which did not report on any treatment outcomes.

Figure 4.7. Indicators of treatment outcomes



4.6. Indicators for discharge

No information on criteria for discharging patients from physiotherapy was found in the records. Generally it was difficult to determine whether patients were discharged from physiotherapy or not.

4.7. Summary

The records of the patients who attended the MOI physiotherapy department for the treatment of NP were analysed. The descriptive statistical analysis show that the physiotherapists used 9 different modalities in various combinations. Therapeutic exercises, which may have included passive mobilisation techniques, was the mostly used modality in all diagnostic categories, followed by therapeutic ultrasound, cervical traction and massage.

Treatment times per modality were between 5 and 15 minutes for electrophysical modalities, 10 and 15 minutes for cervical traction and 10 minutes for cold packs. No treatment time was indicated for exercise therapy, massage and hot packs. Most of the patients were treated twice a week over a 6 week period. Furthermore the physiotherapy records were deficient in the documentation of patients' occupation, treatment outcomes and indicators for discharge. The results will be discussed in the following chapter.



CHAPTER FIVE

DISCUSSION

5.1. Introduction

In this chapter the results are discussed in relation to the aim and objectives of the study, as well as relevant literature. The primary aim of this study was to determine from a review of patients records, the treatment approaches used by physiotherapists, and the documented outcomes in the management of patients with NP at the MOI, Dar es Salaam in Tanzania.

5.2. Demographic characteristics and NP episodes

5.2.1. Gender, age and occupation of the study sample

The analysis of the study sample reveals that more females than males were treated during the study period. Also, the average age of the sample, namely 46 yrs, indicates that most of the affected persons were of working age. Thus, it is likely that neck ailments seen in this population could be related to their work circumstances. However, this assumption lacks evidence since the patients' occupations were not recorded in the files. Thus a relationship between NP episodes with occupational milieu could not be explored. Occupation is very important variable to be considered not only in research process, but also in daily practice as it can influence decision making in the management options. It is difficult to find reasons why more females than males attended for physiotherapy treatment although similar trends regarding gender, age and attendance for treatment were found in many studies: Chiu, Lau, Ho et al., (2006); Tseng et al., (2005) and Côté et al., (2003) to mention a few.

5.2.2. Diagnoses

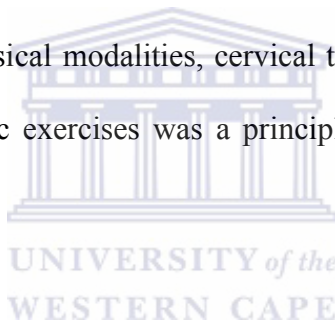
Three diagnostic categories namely CS, CB and the NSNP were identified in the study sample. The latter occupied the largest proportion of the study sample, followed by CB and CS respectively. The explanation of these conditions in relation to the development of the NP may be confusing. However, Vogt et al., (2003) looked at these three and all other possible aetiological factors as unique causes for the NP, and that, perhaps the most common phenomenon here is the resultant pain.

The largest proportion of the sample was classified as NSNP. This can be regarded as a diagnosis based on uncertainty and highlights the need for more accurate diagnosing of NP. It might be possible that this diagnosis was reached by MOs, usually as a result of incomplete history taking and physical examination. Interestingly, a large number of patients in the CS category (17.86%) were in the 55 years and above age group. Some patients of this age group were found in the CB cohort. Interestingly again, only one person of the young age group appeared to be suffering from CS. It is not surprising to find the majority of the CS in the middle-age group since CS is a degenerative joint disease affecting mainly people in this age group (Tierney, McPhee & Papadakis, 2002). However, age should not be considered as the only factor predisposing to CS. Genetic predisposition and repetitive strain injuries in certain occupations may also contribute to CS (The Merck Manual, 2005; Medline Plus, 2006). The characteristic presentation of NP episodes found in this study follows age distributions similar to other studies on the prevalence of NP (Côté et al., 2003; Côté et al., 2004; Ståhl et al., 2004).

Although there were more females in the study sample the percentage distribution of diagnoses within the gender of patients revealed that more men were diagnosed with NSNP. This observation might have a relationship with the types of occupations men engage in, resulting in sustained or repetitive stresses on the structures of the NMS of the neck and therefore causing discomfort.

5.3. Physiotherapy Management

The study identified trends in the physiotherapy interventions selected in the management of patients suffering from NP episodes at the MOI. A total of 9 treatment modalities used in various combinations were identified from the study sample. These were therapeutic exercises, massage, electrophysical modalities, cervical traction and the wearing of a collar. Of these modalities therapeutic exercises was a principle inclusion in all regimens for all patients.



5.3.1. Therapeutic exercises

The use of therapeutic exercises modelled by a professional therapist in the treatment of the NP has been demonstrated by Pesco et al., (2006) to be effective in reducing upper back and NP due to repetitive stress, overwork, and poor posture. Therapeutic exercises, however, brings about a more defined outcome when it is combined with manipulative therapy. Haneline (2006) pointed out that patients are generally satisfied with manipulative therapy especially when it is combined with supervised exercise programmes. The use of therapeutic exercises in combination with manipulative therapy to bring about good clinical outcomes in the management of the NP has also been demonstrated by Jull (2002). However, it was not

possible to determine whether the patients in the study sample received manipulative therapy as part of therapeutic exercise. Manipulative therapy, as such, does not exist as an independent course of training in the school of physiotherapy at the Kilimanjaro Christian Medical Centre, which is currently the only school of physiotherapy in Tanzania. Instead, it is taught as an introductory module within the contextual framework of therapeutic exercises course. The course was built within the therapeutic exercises course of training following research conducted by Mayunga (1989), which looked at the physiotherapy curriculum at the school and identified several areas of training that were lacking. One of these was the contemporary management of the NMAS. In response to Mayunga's findings, continuing professional education programme in the management of disorders of the NMAS was designed and selective manipulative skills were taught by experts from Hogeschool van Amsterdam, the Netherlands from 1993 to 1998 (Emaus & Ramaekers, 1999). Given this background, manipulative therapy was not listed in this study as an independent entity; instead it was administered as a part of therapeutic exercise. Thus, it was not possible to determine whether patients benefited from manipulative therapy or therapeutic exercises or both.

5.3.2. Cervical Traction

Cervical traction was one of the highly used modalities in all three diagnostic categories of NP. The highest usage of cervical traction was among patients with CS. However, no statistical significance was found between CS and the use of cervical traction. Instead, one may speculate that the selection of cervical traction was based on the underlying pathophysiological features of CS, and that degenerative joint disease requires traction in an

attempt to alleviate pain and restoring ROM. A systematic review by Douglas & Bope (2004); Binder (2005b); Graham, Gross, Goldsmith et al., (2006) found inconclusive evidence for this modality of treatment for reasons that the research on the question of efficacy are often not well designed. This recent observation perhaps surmise, in spite of all efforts since Saunders (1998) had formerly reported on this paucity, the question continues to remain unanswered. However, despite the on-going controversy on the viability of the traction, meaningful outcomes of cervical traction have been documented (Klaber Moffett, Hughes & Griffiths, 1990; Costello & Jull, 2002; Maitland et al., 2002; Joghataei, Arab & Khaksar, 2004).

5.3.3. Therapeutic massage

The use of therapeutic massage was demonstrated by a relatively large number of patients in all diagnostic categories of NP. According to Pesco et al., (2006) many bodies have proclaimed therapeutic massage to have musculoskeletal pain relieving effects. Haraldsson, Gross, Myers et al., (2006), however, argue that no recommendation can be simply be made upon therapeutic massage at our times as the question of its effectiveness remains unanswered.

5.3.4. Electrophysical agents

Electrophysical agents used in the management of the study cohort were heat and cold therapy, therapeutic ultrasound, TENS and interferential therapy, Hot and cold packs were prescribed to a relatively small number of patients. These modalities are known for their physiological effects on blood flow, autonomic nervous system and vasoactive substances

(Young & Atherton, 2002; Lehmann & de Lateur, 2003). They have also been found to temporarily reduce pain.

Therapeutic ultrasound was used in the treatment regimens of 87% of the study sample. There is limited literature, however, to support the use of therapeutic ultrasound in the treatment of NP episodes (Wlodyka-Demaille, Poiraudreau, Catanzariti et al., 2002; Swenson, 2003). Study by Harris & Susman (2002) and Douglas & Bope (2004) have highlighted the absence of evidence on the use of ultrasound in the management of episodes of NP. (Perhaps, at the moment, the use of this modality could be explained under the postulation by Ochs et al., (2002), that ultrasound has an effect on periarticular connective tissue changes resulting in restricted joint motion predisposed by degenerative arthritis, muscle tone or cartilage dysfunction. However, it is immature to reach to this assumption in the case of the MOI, since percentage use with respect to the diagnostic categories did not show significant difference between the cohorts. This shows that ultrasound was not selected for the treatment of specific pathology.

TENS was used in just less than 50% of the studied sample. The selection of this modality was probably aimed at reducing pain. However, there exist conflicting evidence on the analgesic effects of the TENS (Ugalde, 2002).

Interferential therapy was the least selected electrophysical modality for the management of NP episodes at the MOI. Ugalde, (2002) regards interferential therapy as an alternative for TENS since their physiological effects are similar, but interferential therapy has an advantage of immediate analgesic effect compared to the TENS.

Generally, there is a deficiency of scientific rigour to support electrophysical agents utilisation for the management of various types of NP (Chiu et al., 2005). This has partly been perpetuated by low quality trials, paucity of literature and heterogeneity of treatment subtypes (Kroeling, Gross. & Goldsmith, 2005).

5.3.5. Collar

Only four patients with CS were prescribed to use a collar.. It is evident here, therefore, that the prescription of this supportive device was in line with anecdotal practice. The Australian Physiotherapy Association's Position Paper on neck pain does not recommend the use of a collar for NP. Instead, it encourages unrestricted active movements of the neck (Costello & Jull, 2002).



5.4. Selection of treatment parameters

Dosage is expressed in terms of intensity and duration (time). Other factors to be considered in the application of a modality are size of the area, depth of structure and mode of application such as intermittent or continuous. These issues were not sufficiently addressed in the physiotherapy records of the study sample. All reports that showed the use of electrophysical modalities, for example, did not report on specificity of a range of choice of treatment. For instance in therapeutic ultrasound information on location and size of the area treated, intensity (Watts/cm²), duration (minutes), frequency (Megahertz) and pulse mode (intermittent or continuous) were lacking specific information regarding therapeutic exercises, namely type of exercises, muscle groups etc were not recorded. Similarly with massage techniques like effleurage, friction or kneading were not recorded; neither was traction indicated as intermittent or continuous as well as traction force in kilograms or

pounds.

This study revealed also that the treatment time per modality, with the exception of therapeutic exercises and massage, ranged between 5 and 15 minutes. It was difficult to determine the criteria for time allocation from the records. In clinical practice physiotherapists consider the following in determining the treatment time per modality: (i) phase of pathology, i.e. acute, sub-acute and chronic phase and (ii) patients response to the previous treatment. Also the manufacturers manuals provided with the treatment modalities contain guidelines regarding treatment durations. However, there is a paucity of literature to scientifically support treatment time allocation for the application of various forms of therapeutic modalities. Laasko et al., (2002) described difficulty in determining appropriate treatment parameters mainly due to the fact that the knowledge on how an electrophysical agent, for example works, and period where it is appropriate to use is lacking.

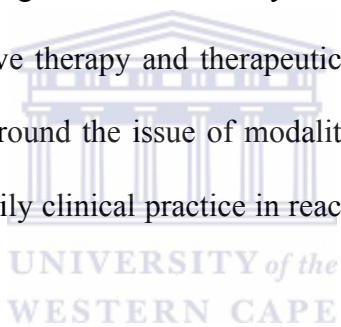


5.5. Combination of treatment modalities:

The nine different modalities found in this study were combined in different ways to form 22 to 35 sets of regimens for the management of NP diagnostic categories. Generally speaking the combinations of modalities to emerge into various forms of regimens used for the treatment of various forms of NP at the MOI did not demonstrate a definitive pattern. Perhaps this multitude of combinations can be interpreted as any of the following: Uncertainty and therefore trial and error approach; an element of routine practice; ineffectiveness of treatment; and changing too quickly from one modality to another when the patient is not getting better.

Lack of scientific rigour in the combination of treatment modalities is evident here as one

could simply see too many combinations for the management of a single condition. This rarity has also been demonstrated by Saturno et al., (2003) where they investigated the validity and reliability of the 34 highly regarded guidelines for NP treatment and found substantial variability in the combinations of regimens. Surprisingly ultrasound was not mentioned in any of these guidelines. This implies that ultrasound may not be considered as a suitable modality for the NP treatment. It might be too early to construe this, however, since a relatively few studies have been conducted to determine the efficacy of ultrasound in the treatment of pain and soft tissue injury (Baker et al., 2001; Ochs et al., 2002). Despite a paucity in scientific rigour, a limited combination of modalities for intervention has been recommended, one of them being the Australian Physiotherapy Association, which supports the combination of manipulative therapy and therapeutic exercises (Costello & Jull, 2002). Despite different perspectives around the issue of modalities combination, clinical reasoning becomes an essential part of daily clinical practice in reaching appropriate and sound clinical decision.



5.6. Frequency of follow-up and treatment duration

Most of the patients were scheduled for a follow-up attendance of two times per week whilst only 1 patient was scheduled to attend four times a week. For the duration of the treatment course, the majority attended for a period of between 2 and 6 consecutive weeks. Of these, many followed a six weeks treatment course while a small number of patients attend sessions for longer than six weeks. The analysis revealed a negative correlation between frequency of follow-up attendance and duration of treatment course. A comparison of means revealed negligible differences between the groups of patients who attended the treatment once, twice or three times. Thus, no matter how many times patient was scheduled to come

for treatment, the frequency did not have any influence on the length of the treatment course. The characteristic scheduling of patient to attend twice a week has been demonstrated in the work of Clair, Edmondston & Allison (2004), whilst treatment duration of between 4 and 12 weeks has been demonstrated by Yoshimatsu et al., (2001) to bring about meaningful outcomes in the management of CS. Chiu et al., (2005) demonstrated the management lasting 6 weeks to have shown meaningful therapeutic outcomes in the management of the NP. The study by Clair et al., (2004) revealed those patients with loading disorders to be suitably managed for an average of 7 sessions over 39 days, which simply mean that they were treated by physiotherapists approximately once a week over a period of 6 weeks, whilst those with ‘movement disorders’ needed an average of 11 sessions over 57 days, which means that they were treated approximately twice a week for a period of approximately 5 weeks to reach significant improvement. It is obvious therefore, that accurate diagnosis and classification with regard to the loading or movement component in the neck problem is identified prior to the planning of treatment. Despite minor variations in the scheduling of follow-up attendances and duration of the course of physiotherapy treatment seen here, the results of this study seem to follow current practices in terms of frequency and duration of NP management.

5.7. Outcome of the treatment interventions

It is essential for physiotherapists to adopt an outcome-based approach in managing patients in their care. Thus, criteria have to be defined with clear observable, measurable and achievable indicators.

5.7.1. Indicators for treatment progress

The physiotherapists reported subjectively on patients’ progress. Reduction in pain was the

major indicator that was used by physiotherapists to decide upon continuation or alteration of treatment interventions. Some of the characteristic format of reporting observed in the therapists' notes were as follows:

- *'Patient is doing fine today; to continued with the above treatment;'*
- *'Patient reported severe pain after interferential therapy during the last visit. Plan: stop interferential therapy, continue with therapeutic exercises: add therapeutic ultrasound'*
- *'Patient has reported reduction in pain intensity compared to last visit;'* and
- *'Patient has reported less frequent pain episodes compared to how it was before'*

Improved ADL was also used as an indicator as follows:

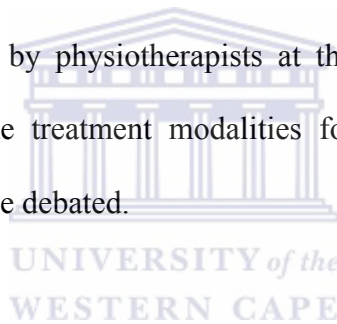
- *'Patient has reported to gain considerable improvement with movements. She/he has resumed his/her working routines;'*
- *'Patient has reported to be able to do some activities at home this week;'* and
- *'Patient reported to remove the collar as it sounded to restrict him in doing some work.'*

However, in a large number of records there was no documentation on progress. This could be due to two problems: (i) inconsistent recording by physiotherapists or (ii) patient's decision to stop follow-up treatment without notice. It was difficult to conclude on a relatively large size of sample which did not appear to have reported on the progress. However two problems can be described here: *inconsistent physiotherapists' recording and patient decision to stop treatments follow-up without notice* (drop outs). The problem of inconsistency in records keeping was also demonstrated in a study by the study done by M'kumbuzi et al., (2004). They retrieved patient records from physiotherapy departments in

selected health care facilities in South Africa and found difficulty in accessing patients' records. They also recognised dearth of recorded information further making it difficult to explore profoundly in this area. The same applies here with the case of the MOI physiotherapy department.

5.8. Summary

The results of this study showed similarities with published studies in terms of patients demographics, selected modalities, frequency of attendance and total duration of course of treatment. However, little support for the use of the modalities except for manipulative therapy and therapeutic exercises have been found. Major gaps in the documentation of treatment and outcomes were by physiotherapists at the MOI were identified. The great variety in the selection of the treatment modalities for NP is a matter of concern for physiotherapists that needs to be debated.



CHAPTER SIX

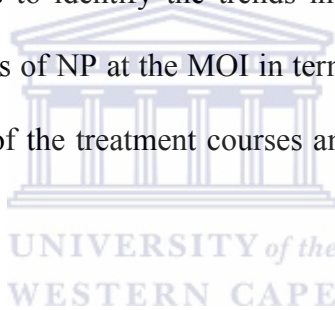
SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1. Introduction

In this chapter, a summary of the study is provided. Details of the major findings are highlighted. Limitations of the study are stated and ultimately, recommendations based on the results are made.

6.2. Summary

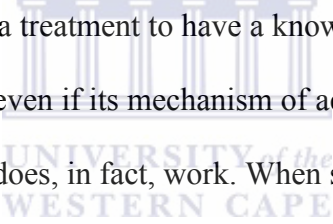
The purpose of this study was to identify the trends in the physiotherapy management of patients suffering from episodes of NP at the MOI in terms of the modalities that were used, treatment follow-up, duration of the treatment courses and the documented outcomes of the interventions.



Given the advances made in terms of assessment and management of persons with NMS dysfunction affecting the vertebral column, there was a need to assess whether current practices in Tanzania are keeping up with the international trends in the management of persons with NP. It was thus imperative to start identifying the characteristic usage of different modalities for the management of the NP by physiotherapists in Tanzania.

In summary, patients suffering from NP episodes at the MOI were managed by 9 different modalities in treatment. These were combined to form different regimens that were used for intervention throughout the course of treatment that took place once to four times a week and lasted for a period of between 2 and 18 weeks. On average, patients attended follow-up

physiotherapy treatment for a period of 6 consecutive weeks irrespective of diagnostic category. Therapeutic exercises (which, in the case of Tanzania, also encompassed manipulative therapy techniques), cervical traction and massage were frequently used physical modalities. Therapeutic ultrasound was the most frequently used electrophysical modality. Others were TENS and interferential therapy. Although the identified literature did not sufficiently support the use of these agents, it may still stand at our times that, most electrophysical agents, despite the on-going mixed perceptions upon their therapeutic effects, they remain in use irrespective of whether the effects are physiological or placebo. The researcher here wishes to end by reiterating Refshauge's (2004, p.254) statement, which goes as follows:



“It is not mandatory for a treatment to have a known physiological basis. A treatment can be useful even if its mechanism of action is unknown, but provided that there is evidence that it does, in fact, work. When selecting a treatment for a particular condition or symptom, physiotherapists can, therefore, consult the available evidence from clinical trials of that treatment.”

A study by Maigeh, (2004) revealed that knowledge of evidence-based practice among physiotherapists, not only at the MOI but also Tanzania, was lacking. This could be one of the predisposing factors that lead to the management of NP in the cohorts to look somewhat similar. EBP requires that a patient receives treatment that suits him/her since needs and behaviour of symptoms among patients are not similar. This is contrary to our anecdotal practice of using treatment recipes with which, no matter what complaints the patient might have, the selection of the treatment may not be based on sound clinical reasoning principles.

6.3. Limitations of the study

The study could not explore in-depth information about the physiotherapy management of patients suffering from NP episodes at the MOI. This could be due to its non-experimental retrospective research design. Apart from the fact that this design was considered appropriate to gain insight into the situation the scarcity of literature in relation to this area further restricted the perspective of the study. Thus, the findings are specific to the MOI and cannot be generalised to all physiotherapy departments in Tanzania. The study highlighted the risks associated with retrospective studies utilising patients records. The latter showed inconsistencies in the format of reporting by physiotherapists. There was also a deficiency in information on patients' occupations, treatment parameters, outcomes and criteria for discharge from physiotherapy. These, further impeded the study to explore profoundly on the characteristic trends of the management of NP in the department.



6.4. Recommendations

Based on the findings of the study, the following recommendations are made:

6.4.1. Documentation of patient information

The dearth of information from patients' files impeded sufficient investigation that could give a clear picture of typical physiotherapy practices in the management of NP episodes. It is recommended, therefore, that the physiotherapy department at the MOI considers the development of the guidelines to standardise the recording of patients assessments, treatment and outcomes. Such information can be captured in a database for various uses in the future.

6.4.2. Developing treatment guidelines

Given the number of modalities and varieties of combinations used in the management of NP episodes, it is recommended that evidence-based guidelines are developed. The department is encouraged to plan for CPD where experts on EBP and standards of practice can provide the input through seminars and workshops. It is further recommended here that the Association of Physiotherapy in Tanzania takes the lead in this matter in order to benefit all physiotherapists in the country.

6.4.3. Assessment

Given the large number of patients diagnosed with NSNP by the MOs it is recommended for the physiotherapists to develop skills in diagnosing NMAS dysfunctions within the scope of physiotherapy. The clinical reasoning acquired in these skills will assist them in clinical decision making regarding appropriate interventions for the NP.

6.4.4. Adopting an outcomes-based approach

Standardised indicators for effective and successful treatment outcomes need to be developed by adopting the existing indicators and make necessary alterations in order to meet the needs of the MOI. The outcomes should always be observable, measurable and achievable.

6.4.5. EBP Approach

It is obvious that the above-mentioned recommendations are made within the theoretical framework of the EBP approach, which is actually a new epoch in physiotherapy practice in Tanzania. Consequently it is recommended here that APTA constitutes a body to monitor and develop EBP in the country.

6.4.6. Ongoing research

Importance of using all physiotherapy interventions, as research opportunities must be appreciated. Well-kept records can be useful resource for research, which should inform the practice. Thus, research in this area involving management of patients with other dysfunctions is also recommended.

6.4.7. Undergraduate curriculum

Training schools should ensure that their curricula prepare undergraduate physiotherapy students with recent developments in the management of disorders of the NMS.

6.5. Conclusion

This retrospective explorative study succeeded in shedding some light on the physiotherapy management of patients with NP episodes at the MOI. The results have reflected treatment choices used by physiotherapists in the management of NP episodes, and would undoubtedly sensitise physiotherapists to embark on the utilisation of guidelines not only for the neck but also for other different conditions referred for physiotherapy. Emphasis is put here on APTA to work on recommendations that EBP becomes a tool for ensuring quality treatment in physiotherapy.

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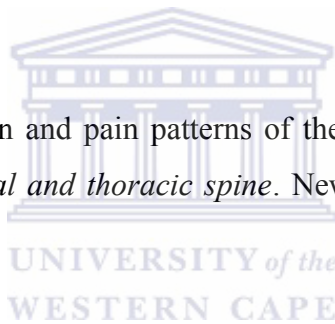
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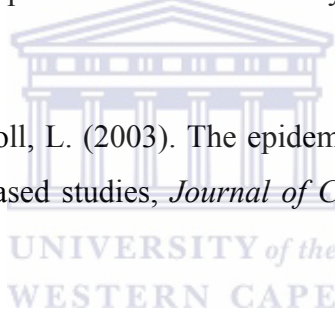
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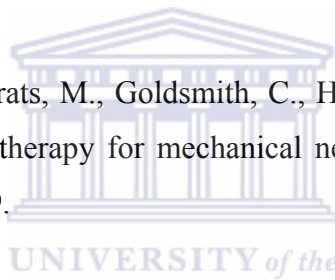
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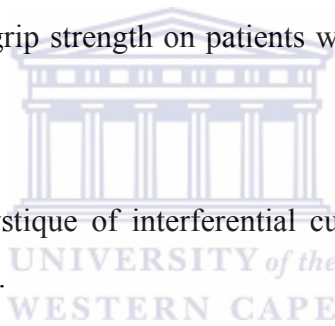
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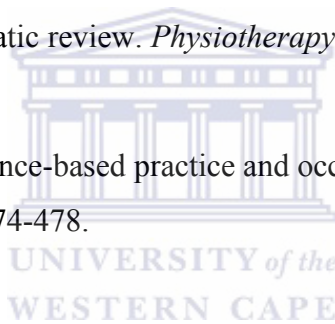
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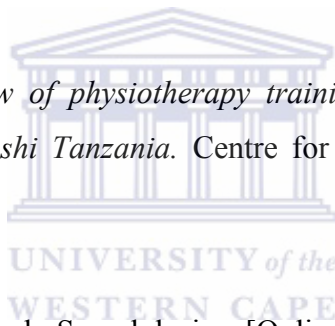
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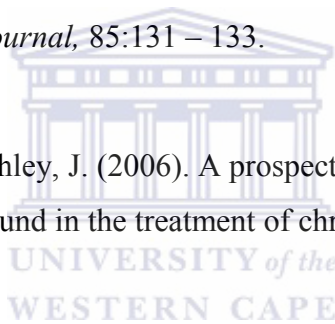
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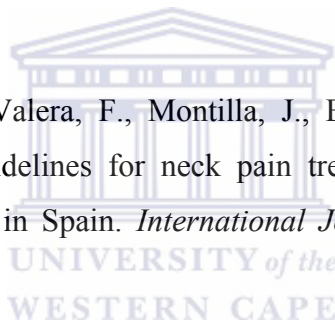
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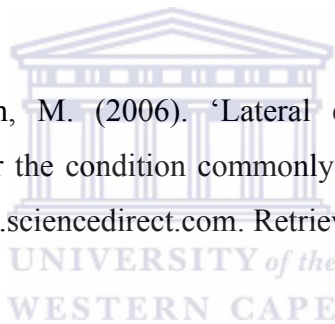
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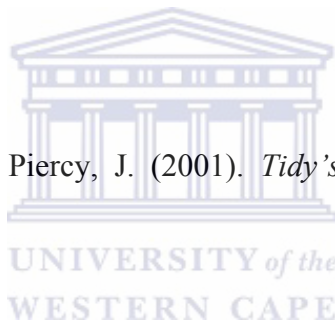
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Appendix i

DATA CAPTURE SHEET FOR A RETROSPECTIVE STUDY ON THE
MANAGEMENT OF NECK PAIN AT THE MUHIMBILI ORTHOPAEDIC
INSTITUTE
DECEMBER 2005 – JANUARY 2006

ID Number.:

1.0. Patient demography:

1.1. Gender: (tick the appropriate) Male Female

1.2. Age (years):

1.3. Occupation: Sedentary Manual Others (specify).....

2.0. Profile of neck pain episode:

2.1. History headache: Reported Not reported

History of back pain: Reported Not reported

History of shoulder pain: Reported..... Not reported

History of pain to the arm: Reported Not reported

Any other symptom that might have relationship with the neck pain episode
(mention).....

2.2. Investigation done: Plain radiography Contrast radiography

CT-Scan Other (mention

2.3. Diagnosis (ruled out by a Medical Officer):

3.0. Treatment profile

3.1. Date commenced (mention):

3.2. Frequency treatment: Daily Once per week

Twice per week three times per week

Occasional/on recurrence of symptoms

3.3. Treatment course length (mention number of weeks):.....

Date discharged

4.0. Interventions:

4.1. Therapeutic exercises: Yes No

Type used (mentioned)

Duration (time) per intervention (minutes)

4.2. Therapeutic massage Yes No

Types used (mention)

Duration (time) per intervention: (minutes)

4.3. Cervical traction: Yes No

Mode chosen: Intermittent Sustained Not mentioned

Duration (time) per intervention: (minutes)

4.4. Electrophysical agent(s) : Yes No

Modality used (mention)

Mode chosen (e.g. Intermittent, continuous etc)

Duration (time) per intervention: (minutes)

4.5. Others (mention):

.....

5.0. Outcome documentation:

5.1. Indicators used or probing treatment progress (mention):

5.2. Indicators used for consideration of a discharge from treatment (mention)

.....