# WORK-RELATED LOW BACK PAIN AMONG CLINICAL NURSES IN TANZANIA.

**By**

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**November, 2008**

# WORK-RELATED LOW BACK PAIN AMONG CLINICAL NURSES IN TANZANIA.

## MARY CHANDEU MWILILA

## KEY WORDS.

Tanzania

Prevalence

Low Back Pain

Health Care Professional

Clinical Nurses

Occupational Risk Factors

Back injury prevention techniques

Knowledge

Barriers to back care

Cross-sectional study

## ACRONYMS

**FGD -** Focus group discussion

**LBP -** Low back pain

**MOHSW -** Ministry Of Health and Social Welfare

**MOI  -**    Muhimbili Orthopaedic Institute

**USA -**    United States of America

**UK -**    United Kingdom

**UWC -**   University of the Western Cape

# ABSTRACT

Low back pain (LBP) is a significant problem among the nursing population worldwide. Manual lifting and shifting of heavy objects and patients are primary contributing factors. Nurses are supposed to be knowledgeable about the risk factors and preventive measures and effectively apply it into practice to prevent them from sustaining back injuries. Strategies to reducing the incidences of LBP in nurses have been previously implemented but with little outcomes. The **purpose** of this study was to explore the relationship between occupational risk factors and the prevalence of LBP in nurses at MOI, Tanzania. Therefore, the study examined; the prevalence of LBP amongst nurses, work-related risk factors contributing to LBP, knowledge and effectiveness of back care techniques, and barriers to effective back care techniques in clinical nurses. A cross–sectional study design was utilized, which employed **mixed research method**. For the quantitative component of the study a self-administered questionnaire was used to collect data which targeted a convenient sample of 312 nurses. For the qualitative component focus group discussions were conducted with three purposive sample groups of nurses which included nurse assistants, enrolled nurses, and registered nurses in order to explore more on the barriers to effective back care techniques in their job. The discussions were tape-recorded and transcribed there after. The software SPSS 15.0 version was used to analyze quantitative data, in which descriptive and interferential statistics were done. Results are presented using tables, charts, and graphs. The focus group

interview transcripts were analyzed under categories and themes. The study was conducted under the adherence of the ethical considerations in which participant's anonymity, confidentiality of the information they gave, voluntary participation as well as their right to withdraw from the study were observed. The **results** of this study demonstrated that; (i). There is a high prevalence (73.6%) of LBP among nurses in the studied population. (ii). Inconsistent use of back care techniques in the job practice was the only significant (p-value= 0.014) risk factor established in this study, with Odds ratio 2.9, p-value= 0.042, Confidence interval 0.1 – 0.8, at alpha =0.05. (iii). Fifty percent of the participants in the sample were knowledgeable about the risk factors and back care techniques, but the majority (60%) of those respondents reported to be inconsistent in implementing the techniques. (iv). The perceived barriers to effective back care included; insufficient training, work environment conditions, personal attitudes and knowledge versus behavior.

**Conclusion:** The results of the current study demonstrated a strong relationship between the occupational physical activities and the low back pain in nurses at MOI. However, the actual determinants are multi-dimensional as it involves occupational factors as well as personal attitudes and behaviors. Given the higher prevalence of LBP in nursing population, and its impact according to the ICF measures in terms of impairment, activity limitation and participation restrictions as narrated in the literature. The recommendations are made based on the study findings.

# DECLARATION

I declare that *work-related low back pain among clinical nurses in Tanzania* is my own work that it has not been submitted for any degree or examination in any other university, and all the sources I have used or quoted have been indicated and acknowledged by complete references.

**Mary Chandeu Mwilila**

**Signed: ...........................**

**November, 2008**

**Witness:  Signed: ………………………..**
             **Prof. José Frantz**

# DEDICATION

This thesis is dedicated to the memory of my late parents, Mr. Peter Chandeu Milonge and Mrs. Rosina Bonna Chandeu who left this world to rest in eternity in 1995. Their love and sacrifice made the foundation for me to be what I am today.

My dearly beloved family, Mr. Viatory Mwilila, Mkama Caleb, Amanda and Beverly. Thank you for believing in me and giving me the opportunity to advance my career. You have been the source of inspiration in my life and the closest true friends. You are indeed the crown of my joy.

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Aunt Rose Pamba, my friend sister for taking care of my home so I could concentrate on my studies.
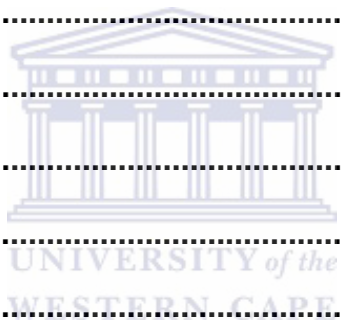
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WESTERN CAPE

# CHAPTER ONE

# INTRODUCTION

## 1.1    Introduction

This chapter provides background information on low back pain among the general working population, healthcare workers with emphasis on nurses. The chapter further explains the global perspectives on the prevalence of low back pain in nurses. The research question, aim, objectives and significance of the study are also explained. The chapter ends with the definitions of the terms used in the present study.
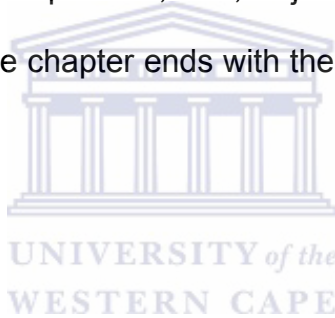
## 1.2    Background

Work-related low back pain (LBP) is one of the most common health conditions reported by the working population worldwide (Rojas, Stark & Tembo, 1990; Omokhodion & Sanya, 2003; Burdorf & Jansen, 2005; Sanya & Ogwumike, 2005).  LBP has been found to be the major cause of work absenteeism and occupational disability costs among workers (Goetzel, Hawkins, Ozminkowski & Wang, 2003; Steward, Ricci, Chee, Morganstein, & Lipton, 2003). However, health care workers were found to have a higher prevalence of LBP compared to other industrial workers (Jensen, 1987; Malone, 2000).

Nursing is a healthcare group recognized to have the highest rate of back injuries associated with manual handling worldwide (Garg & Owen, 1992). According to Jensen (1987), nurses in the United States of America (USA) had the highest incidence of disabling back injuries. The annual incidence rate of work-related back injuries among hospital nurses in France in 1990 was reported to be 57% (Niedhammer, Lert & Marne, 1994). In China, prevalence rates of work–related back injuries in nurses at a teaching hospital were also reported to be 57% (Smith, Wei, Kang, & Wang, 2004).  However, an eight year longitudinal study by Maul, Laubli, Klipstein & Krueger (2003), which was conducted in a university hospital in Switzerland, reported high prevalence rates of LBP in nurses varying from 73% to 76%. These studies suggest that work-related back injury in nurses is a significant problem worldwide. Africa has not been spared from this disabling condition of low back pain. A systematic review conducted by Louw, Morris & Grimmer-Somers (2007), reported on a one year and lifetime prevalence of LBP among Africans which ranged from 14 -72% and 28 – 74% respectively.

Smedley, Egger & Cooper, (1997) contend that the high incidence of LBP in nurses can be associated with factors such as heavy workload and adverse postures. The work-related factors to LBP and the intervention programmes aimed at reducing incidences of back injuries among nurses have been assessed (Daynard et al., 2001). However, the evaluation studies have reported very few outcomes of the intervention programmes (Maher, 2000; Hartvigsen, Lauritzen, Lings & Lauritzen, 2005). Nurses' knowledge about back injuries and prevention

techniques are important factors in the implementation of effective intervention programmes. However, there is a dearth of literature on these factors, and such studies which are available are from developed countries (Daynard, 2001; Hartvigsen *et al.*, 2005).

Physiotherapists are among the health practitioners involved in providing treatment and intervention programmes to LBP patients (Ehrniann-Feldman, Rossignol, Abenhaim & Gobeille, 1996; Tacci, Webster, Hashemi & Christiani, 1999). Studies found that LBP patients make up the majority of the patients being treated by physiotherapists working in the musculoskeletal settings (Battle, Cherkin, Dunn, Clol & Wheeler, 1994; Jette, Smith, Haley & Davis, 1994; Foster, Thompson, Baxter, Allen, 1999).
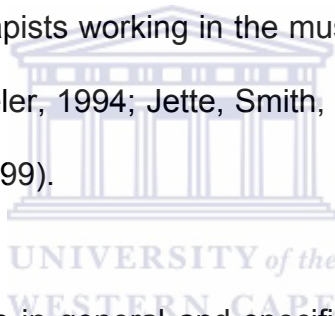
The impact of low back pain in general and specifically on nurses include work absenteeism, risk of developing chronic LBP, as well as associated physical, social and economic costs (Bener *et al.*, 2006; Van Nieuwenhuyse *et al.* 2006; Mitchell, O'Sullivan, Burnett, Straker & Rudd, 2008). The researcher has been practicing physiotherapy in an orthopaedic setting for approximately 9 years, and LBP has been among the most common musculoskeletal problems in the nursing population.

## 1.3    Problem statement

Low back pain among nurses has been highlighted as a major problem in many countries, but there is little information from Africa, and no published studies from Tanzania were found.

## 1.4    Research question

What is the relationship between the occupational activities and the prevalence of LBP among clinical nurses at Muhimbili Orthopaedic Institute, in Tanzania?

## 1.5    Research Aim

To determine the relationship between occupational physical activities and the prevalence of LBP among the clinical nurses at Muhimbili Orthopaedic Institute, in Tanzania.
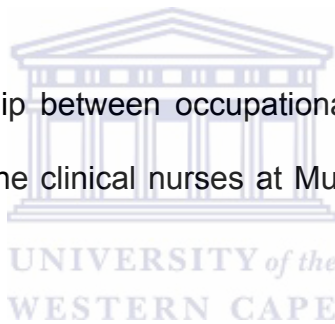
## 1.6    Objectives   of the study

1. To determine the prevalence of LBP among clinical nurses at MOI in Tanzania.

2. To determine the occupational physical activities associated with LBP in nurses.

3. To examine knowledge and effectiveness of back care techniques among clinical nurses.

4. To determine barriers to effective back care among clinical nurses.

## 1.7    Significance of the study

Investigating the work-related LBP in nurses in the selected setting contributes to the scanty literature which is available and improves our understanding of the situation.   Moreover, results of the current study are useful for physiotherapy professionals' future strategic approaches in primary and secondary prevention of LBP among nurses.

## 1.8    Definitions of terms

**Low back pain –** is a pain or discomfort in the lumbar spine region down to the gluteal folds may or may not radiate to the thighs, and legs below the knees (Lau et al., 1995; van Tulder et al., 2006).
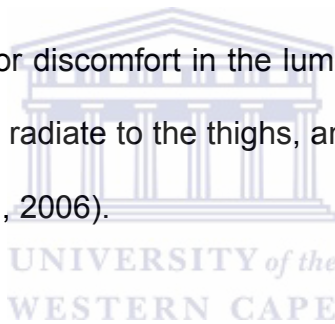
**Work-related low back pain –** is the LBP that is caused, contributed by or significantly aggravated (for a preexisting LBP) by the events or exposures in the work environment. **(**Bureau of Labor Statistics, 2007**).**

**Clinical nurse –** is a professional nurse with an expertise in patients care rather than research or administration (Taber's Cyclopedic Medical Dictionary, pp 43).

# CHAPTER TWO

# LITERATURE REVIEW

## 2.1 Introduction

This chapter presents an overview of the literature with regard to work- related LBP among nurses. However, the review in will primarily focus on the prevalence of LBP among clinical nurses, predisposing risk factors to LBP in clinical nurses, the impact of LBP in nurses and knowledge and effectiveness of back care techniques among nurses. Due to the paucity of literature from Tanzania in this field, literature from around the world has been reviewed.

## 2.2 Prevalence of LBP among clinical nurses

Studies have found a high prevalence of LBP among health care workers as compared to other hospital and industrial workers (Ljungberg, Kilbom & Hagg, 1989; Mulimba, 1990; Ono, Shimaoka & Hiruta, 1997; Omokhodion, Umar & Ogunnowo, 2000). Moreover, healthcare has been suggested to be one of the most dangerous industries in the U.S.A, and although the rate of injuries generally seems to have declined since 1991, the low back injury rate among healthcare workers has continued to increase (National Labor Assembly, 2006).

According to Garg and Owen (1992); Garrett, Singiser & Banks (1992); Owen, Garg, Smith & Jensen (1992); and Kumar (1990), nurses are the professional

health care group with the highest incidence of back injuries associated with manual handling worldwide.  Nestor (1988) reported that nurses account for 40% of the job-related back injuries to hospital workers.  Hignett (1996) summarized the findings of over 80 studies conducted in various countries which suggest that prevalence of back injuries in nurses world-wide is approximately 17%, with an annual prevalence of 40–50% and a life-time prevalence of 35-80%. However, Hignett argues that these figures are a gross under-estimation of the problem due to poor reporting systems and under-reporting of the problem in many countries.  A study by Hofmann, Stossel, Michaelis, Nubling & Siegel (2002) reported higher figures, suggesting prevalence of work-related low back injuries in nurses to be 61%, with lifetime incidence rates of 87%.  Similarly, Smith *et al.* (2004) suggest a prevalence rate of 57% for work-related low back injuries among nurses.  Moreover, a study by Hignett (1996) reported that 52% of nurses had chronic low back pain while a recent study by the American Nurses' Association (2006) suggested that 83% of nurses work with some degree of back pain.

A study conducted in Ghana highlighted the fact that nurses had a greater chance of developing LBP (>21.5 times) than teachers (Clarke & Sutherland, 2007). Omokhodion *et al.* (2000) conducted a study among Nigerian rural hospital workers. The authors reported that nurses had a higher (69%) prevalence of LBP than the administrative staff (55%) and cleaners/aides (47%). More recently, a cross-sectional study by Nabe-Nielsen, Fallentin, Christensen,

Jensen & Diderichsen (2008), compared job-related physical demands and their association with LBP among health care personnel. The authors recognized that a one-year prevalence of LBP in nurses was higher (39%) compared to prevalence in physicians and psychologists (23%) and that of physiotherapists and ergotherapists (33%). Thus it can be seen that the incidence of LBP in nurses is high.

## 2.3    Predisposing risk factors for LBP in clinical nurses

Studies report that ergonomic risk factors for back injuries among nurses are associated with patient handling and the frequency nurses are required to move patients manually (Smedley, Egger, Cooper & Coggon, 1995). In addition, manual lifting is the primary cause and the most important risk factor to LBP among nurses (National Labor Assembly, 2006). Moreover, Smedley *et al.* (1995) reported that 36% of back injuries in nurses are associated with patient handling.

It was also reported that an estimate of 80% of the compensatory back pain injuries in nurses in the USA is attributed to patient handling (Lean, 1991).  Most of these handling tasks are performed with the patient being either in or close to the hospital bed. Smedley *et al.* (ibid.) added that moving a patient on a bed is considered to be another problem as the load is inconvenient, mattresses generally inhibit sideway movements and beds vary in height and width.  They

concluded that nurses are usually unable to attain an optimum lifting position and instead, reach far across the patient in order to obtain a sufficient grip.

Smedley *et al.* (1995) further list specific well-known high-risk tasks, which include moving the patient on the bed, transferring the patient manually between bed and chair, lifting patients in and out of the bath and lifting the patients manually from the floor.  Other contributory factors to LBP among clinical nurses include repetitive work practices involving bending, frequent twisting, lifting heavy objects and making forceful movements (Buckle, 1987; Kumar 1990, Punnett, Fine, Keyserling, Herrin & Chaffin, 1991; Smedley *et al.* 1997). Awkward /adverse or static working postures, stooping, high physical exertion and working under pressure were also found to be the important physical risk factors for LBP in nurses (Stubbs & Baty, 1987; Engels, 1996; Omokhodion *et al.* 2000). According to Malone (2000) cumulative compression biomechanical load on the spine, combined with an awkward posture, increase spine flexion thus inducing disc rapture that can bring about changes similar to those of natural disc degeneration.

A study by Bigos, Battie & Spengler (1991) recognized a link between back injuries among nurses and psychological stress at work.  Although the exact mechanism linking high work stress to LBP is not well understood, stress might increase muscle tension or cause a sensation of pain similar to that of the lower back. Moreover, other psychological work risk factors were found to be

associated with future LBP. These are a poor psycho-social work environment (Bigos et al.1991), a lack of social support from colleagues, limited job control and a lack of stimulation (Lagerstron, Wenemark & Hogberg, 1995; Bongers, De Winter, Kompier, 1993; Smith & Leggat, 2003). Furthermore, mild depression and job dissatisfaction have also been identified as associated with future LBP (Bigos *et al.*1991; Smedley *et al.*1997, Woolf & Pfleger, 2003).

However, the literature also recognizes some personal and lifestyle factors such as age, obesity, lack of physical exercises, smoking and strength of back and abdominal muscles as contributing factors to LBP (Australian Institute of Health and Welfare, 2000; Woolf & Pfleger, 2003; Vindigni *et al.*, 2005). Nevertheless, poor knowledge and inadequate training on patient transferring techniques can also be associated with LBP in nurses (Kjellberg, Lagerström, Hagberg, (2003). When determining factors contributing to the prevalence of low back pain in nurses, environmental, personal as well as psychological factors should be included.

## 2.4   The impact of LBP among clinical nurses

The impact of LBP on nurses encompasses various aspects of their lives ranging from the quality of their life to the economic situation of the individual sufferer as well as the society.  The International Classification of Functioning, Disability and Health ( ICF) is a conceptual framework used in clinical research to highlight the impact of diseases or conditions such as low back pain on normal functioning.

## 2.4.1  Impact of LBP on nurses' psychology and physical ability

The impact of work-related back injuries among nurses includes loss or impairment in physical function due to pain (Helminger, 1997; Bener, 2006). Some LBP sufferers experience disabling pain that negatively influence the quality of their life (Van Nieuwenhuyse *et al.*, 2006). The rundown of physical ability leads to further deterioration of general health; persistent, recurrent or progressive pain and prolonged periods of disability capacity (Helminger, 1997).

However, intense and overwhelming experiences of pain have been found to have a strong association with anxiety, distress, fear avoidance behaviors and chronic LBP (Burton, Tillotson & Main, 1995; Grotle, 2005). Moreover, it has been noted that individuals with LBP tend to have negative attitudes towards strenuous activities and leisure pursuits based on fear avoidance beliefs (Waddell, Feder, McIntosh, Lewis & Hutchinson, 1996; Woolf & Pfleger, 2003). Additionally, there is an association between mental and psychological disturbances in people with LBP, which further result in insomnia, irritability, anxiety and depression (Patrick & Erickson, 1993). Nevertheless, Bener *et al.* (2006) identified a strong association between depression and somatization among LBP sufferers. Thus it can be seen that low back pain has a major psychological impact on the sufferer.

## 2.4.2 Social interruption

LBP causes participation restriction and inadequacy in fulfilling social or interpersonal relations to the sufferers. Individuals with LBP have been found to have lost or decreased interactions in leisure activities, to suffer from increased family stress and being a loss to their social group and community (Claiborne, Vanderburgh, Krause & Leung, 2002). According to Duguesnoy *et al.* (1998) and Bener *et al.* (2006), LBP is found to interfere with interpersonal relationships between the majority of the sufferers and their associates. Furthermore, nurses suffering from LBP have been found to experience a feeling of being secluded and even short of support (Mitchelmore, 1996).

Similarly, LBP has adverse effect as it can avert partner intimacy. A study by Duguesnoy et al. (1998) documented that 46% of LBP sufferers had problems in their sexual life. According to Bener et al. (2006) there is a significant decrease in sexual ability in individuals with LBP. This can lead to dissatisfying sexual relationships, which strikes at the foundations of marital relationships.

## 2.4.3 Loss of productivity and career life

Individuals with LBP are likely to incur productivity losses at home if they are unable to complete routine domestic activities (e.g. laundry activities, cooking and maintenance). This could be due to the fact that individuals with LBP will either depend on hired household help or unpaid household family members to

carry out those tasks on their behalf (Dagenais, Caro & Haldeman, 2008). Seemingly, LBP is accountable for considerable expenses to individual LBP sufferers and even the society (Van Nieuwenhuyse, 2006). This can be explained in terms of direct and indirect health care costs.

Moreover, LBP is responsible for a financial burden as a consequence of inefficiency, work absenteeism, being deprived of an income and potential loss of workforce (Helmlinger, 1997). According to Nestor (1988), back pain accounts for forty percent of the nurses leaving the profession because of illness. Owen's study of 503 nurses (1989) reported that thirty-eight percent were suffering severe work–related back pain sufficient to require work leave, twenty percent had changed their unit or position due to LBP, twelve percent had left the profession and twelve percent were considering leaving the profession due to LBP. Similarly, a study done in England (Stubbs, Buckle, Hudson, River & Baty, 1986) found that twelve percent of the nurses were intending to leave the profession due to LBP. Thus, low back pain can have a serious impact on the career loss of sufferers as it can result into long-term leave or early retirement (National Board on Health and Welfare, 2001).

## 2.4.4 Impact of LBP to the Government and employers

The consequences of low back pain to the government and other employers include the high cost of workers' compensation insurance to be paid to injured workers, recruitment or training costs, and lost time (Menzel, Lilley & Robinson,

2006).  According to Mitchelmore (1996), low back injuries account for the loss of experienced and valuable personnel. Consequently, the replacement of injured staff can influence the stability, efficiency and quality of health care services (Feldstein, Vollmer & Valanis, 1990; Smedley *et al.* 1997).  Moreover, there is a substantial cost to the health services in the course of sick leave, compensation settlement, staff replacement and treatment of the injured workers ((Newman & Callaghan, 1993; Kneafsey 2000).  The estimated financial cost for work-related back injuries in the USA was found to be as high as $16 billion annually (Weeks, Levy & Wagner, 1991), while in the United Kingdom the annual cost estimation for back injury in nurses was approximately £50 million (Smith & Seccombe, 1996).  In South Africa, Berlot (2005) estimated that worker disability cost due to LBP exceeds R6 billion a year.
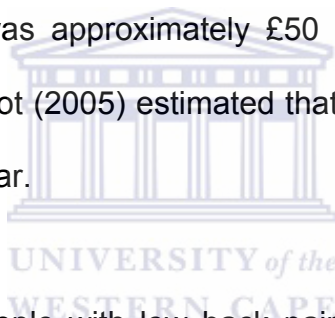
It is therefore clear that people with low back pain experience major physical, social, mental as well as occupational disruptions (MacDonald *et al.*, 1997).

## 2.5 Knowledge and effectiveness of back care techniques among clinical nurses.

Nurses are exposed to high physically demanding tasks involving the lifting and transferring of patients, and prolonged static postures (Vieira, 2007).  This implies that nurses are required to be well-informed of the back injury risk factors and the preventive measures for them to carry out their duties safely. Nestor (1988:2) asserts, "Manual handling of patients is a skilled activity which requires

time, practice, and application in order to be accomplished in a safe and comfortable manner".

The most commonly recognized approach to low back injury prevention was formerly the education and training programs in biomechanics and lifting techniques (Van Dieen, Hoozemans & Toussaint, 1999; Owen & Garg, 1991, 1993). However, nurses themselves have been found to be inconsistent and improperly in applying the techniques they have been taught. A study by St. Vincent *et al.* (1987) (as cited in Charney & Hudson 2004) reported that many nurses do not use the principles of body mechanics in their clinical practices. The same authors further agued that though body mechanics are important in lifting and transferring heavy objects, there are often limitations in their application which could be due to the workers' ability and environment. The same authors concluded that manual lifting techniques should include patient and environmental factors in addition to nursing knowledge and skills in order to improve matters.

It is worth pointing out that researchers have established that education and training programmes alone have been largely ineffective in preventing back injuries in nurses (Pheasant & Stubbs, 1992; Feldstein *et al.* 1993; Hignett, 1996). In addition, other researchers argue that body mechanics and back care training are compelling elements of back injury programmes (Owen and Garg, 1991, 1993 & Yassi *et al.*, 1995). However, the effect of the latter has been

evident only when combined with ergonomic interventions that arise with changes in job demands (Jensen, 1990 & Owen, 1988). Studies also suggest that training must be incorporated with mechanical transferring devices to be effective (Lynch & Freund, 2000). There is increasing evidence in the literature that suggest that successful management of manual handling in health care organisations needs to incorporate more than one approach (Bewick & Gardner 2000; Retsas & Pinikahana 2000; Power 2001).

Recent researchers have acknowledged the urgent need for the implementation of lifting teams to reduce the heavy lifting done by nurses with the subsequent risk of back injuries (Hefti *et al.* 2003; Hignett, 2003; Trinkoff & Brady, 2003; Guthrie et al. 2004). The teams should comprise skilled personnel trained in biomechanics, lifting techniques and the usage of mechanical lifting devices exclusively for lifting and moving patients. According to Edlich, Winters, Hudson, Britt & Long (2004), lifting teams are essential to reduce the work load for nurses and thereby to safe-guard the valuable resource of skilled nursing personnel. The same authors concluded that the lifting team intervention was introduced in recognition that lifting is a specialized skill to be performed only by expert professional patient movers who have been comprehensively trained in the latest lifting device techniques.

## 2.6 Summary

The chapter highlighted essential issues regarding work-related LBP in nurses. The prevalence and work-related predisposing factors were described. The impact of LBP on different aspects including the individual sufferer, the family, society and employers/government was identified. The knowledge and effectiveness of the back care techniques among nurses was examined. However, the reviewed literature highlights the need for further studies to determine the knowledge and barriers to effective back care among clinical nurses. The next chapter describes the methodology of the study.

# CHAPTER THEE

# METHODOLOGY

## 3.1 Introduction

This section describes the mixed research method which was used in order to achieve the objectives of the study. The description of each research approach will be given separately under subheadings detailing sampling methods, sample size, data collection methods, research instruments, and data analysis. The section will finally state the aspect of ethical considerations in the study.

## 3.2 Research design

A cross-sectional descriptive study design which employed a mixed methods approach was used. The collection of both quantitative and qualitative data was conducted sequentially. The study began with the collection of quantitative data in the first phase, followed by the open-ended focus group interviews in the second phase in order to collect detailed information from the participants. The qualitative data was used to compliment the quantitative data which were obtained in this study. The choice of using a mixed method in this study is due to the fact that, collecting different types of data allows for better understanding of the research problem (Creswell, 2003). Moreover, a cross-sectional design is appropriate for describing the relationship of a phenomenon at one point in time. It is also economical and manageable within limited time framework (Polit, Beck & Hungler, 2001).

## 3.3 Research setting

The study was based at the Muhimbili Orthopaedic Institute (MOI), which is a teaching and referral institution, in the Dar es Salaam city, Tanzania. The study was carried out between December 2007 and January 2008. MOI is an autonomous Institution objectively providing primary, secondary and tertiary care for musculoskeletal conditions. The Institution provides health services based on preventive, curative as well as rehabilitative in the field of Orthopaedic, Traumatology and Neurosurgery. The Institute renders services to both public and private clients. The hospital has a bed capacity of 150 (30 in private wards and 120 in public wards). At the time of the study, the Institute had an average of 389 inpatients per month in two public male wards, one female ward, two private wards and the pediatric ward. The average number of outpatients was 2778 per month. The hospital has three operating theatres and an intensive care unit. The information was obtained from the statistics and public relations offices of the hospital.

## 3.4 Study population

The study population of this study was defined as all the clinical nurses permanently employed at the Muhimbili Orthopaedic Institute at the time of study. The Hospital had a total number of 318 nurses which consisted of 169 nurse officers, 16 nurse midwives (enrolled nurses) and 133 nurse assistants / medical attendants who were working in clinical settings at the time of the study.

## 3.5　Inclusion criteria

The study included all the registered nurses, nurse assistants (medical attendants), and enrolled nurses employed by MOI full time for at least three months by the time of the study. Both male and female nurses were recruited for the study.

## 3.6　Exclusion criteria

The study excluded nurses who had worked for less than three months in the field. The screening question in the first part of the questionnaire was used for exclusion.

## 3.7　PART ONE OF THE STUDY: QUANTITATIVE COMPONENT

The quantitative approach was used to determine prevalence of LBP, occupational predisposing risk factors for LBP, knowledge and effectiveness of back care techniques, and partly, the barriers to effective back care among clinical nurses.

### 3.7.1　Sampling method

A convenient sampling method was employed where all the available and willing participants were recruited for the study (Collins 1990 & McBurney, 2001 as cited in De Vos 2005). Participants were recruited from all the wards and sections of the Hospital as outlined in the setting above.

### 3.7.2 Sample size

The sample size targeted the whole study population of 318 nurses.

### 3.7.3 Data collection procedure

The process started by taking the clearance letter from the Higher Degrees Committee of the UWC (Appendix A) accompanied with a letter of request for permission (Appendix B) together with a copy of a study proposal to the MOHSW. The response of study clearance was given in writing (Appendix C). Before commencing the pilot study a letter requesting for permission (Appendix D) which was accompanied with clearance letters (Appendices A & C) and study proposal was handed in to the director of medical services at MNH. The study clearance was granted in writing (Appendix E) after which the pilot data collection followed. The same procedure was done at the study setting (MOI) where by permission was sought from the executive director of MOI before commencing the actual data collection. This was done through a letter (Appendix F) which was accompanied by copies of clearance letters from Higher Degree Committee of the UWC (Appendix A) and MOHSW (Appendix C) together with a study proposal. The permission was granted in writing (Appendix G) after which data collection commenced.

Data were collected by an anonymous questionnaire-based survey from the willing nurses who were working at MOI. Due to changing work shifts, the questionnaire was administered to nurses and collected immediately after completion. A few participants who could not complete the questionnaire on the

same day due to tight schedules completed the questionnaires and researchers collected the questionnaires the following day. Participants were informed of the study verbally and in writing through the information statement (Appendix H). Willing participants gave their consent by signing the consent form (Appendix J) before completing the questionnaire (Appendix L). Two social scientists who were trained as research assistants, worked together with the principal researcher in collecting data. Burns (2000) suggests that the questionnaire method is appropriate when dealing with many respondents, and allows every participant to get similar assessment tool to complete giving result to standardized responses. Moreover, the use of a questionnaire has a possibility of complete anonymity of the respondent (Polit, et al. 2001).

### 3.7.4  Research instrument

The questionnaire (Appendix L) which was used for this study consisted of four sections, which included (I) socio-demographic questions, exercising and occurrence of LBP; (II) Questions about nursing employment profile and job characteristics; (III) questions regarding knowledge and effectiveness of back care techniques, and barriers to implementation of the techniques in nursing practice. It also included workers' physical perceptions of their jobs ("very frequent" postures and activities of the job). Finally, section IV of the questionnaire included standardized psychophysical measures of physical stress and the body part discomfort index (Corlette & Bishop, 1976). The psychophysical measure of physical stress included in this questionnaire has

been previously evaluated and is accepted in the ergonomics field (Boussenna, Corlett, & Pheasant, 1982; Vieira et al., 2006).

### 3.7.5  Content validity of the research instrument

According to Babbie (2004: 143), validity refers to the extent to which an empirical measure accurately reflects the concept it is intended to measure. Monette, Sullivan & Dejong, (2002) further explained content validity as referring to the adequacy of the measuring tool in covering the full range of meanings or forms in content of the tool for the variable desired to be measured. The research instrument for the present study was developed from the literature and questions which were used for a similar study (Vieira, Kumar, Coury and Narayan, 2006). The researcher made major modifications by changing questions from open ended to close ended. Questions that were relevant to the objectives of the current study were included, and questions from the source questionnaire that were not relevant to the present study objectives were excluded. The questionnaire was adapted under permission of the source author. The questionnaire was written in English, before it was translated into Kiswahili as a national language in Tanzania. The Kiswahili version questionnaire was then assessed for clarity within the Tanzanian hospital environment. The research instrument was reviewed by a peer group for face validity. The content validity of the instrument was established by the experts who included orthopaedic surgeons, a physician, physiotherapists, nurses and independent translators. The instrument was further pre-tested by ten nurses within the target population. The feedback from the experts and nurses who participated in the pretest was

integrated to the questionnaire to improve questions, format and scales used. The final questionnaire was translated into English, then back to Kiswahili by a different translator in order to ensure same content meaning of the questionnaire. No differences occurred between the two versions. The translations were done by independent translators.

### 3.7.6  Reliability of the research instrument

Reliability refers to the stability or consistency of the measuring tool in yielding similar results from the same population at different times (Monette et al., 2002:117). Test-retest was used for the reliability test of the research instrument within the study population. Two data sets from a sample of 10 participants were collected at the interval of one week. The two sets of data were analyzed using SPSS software. The correlation of the two data sets were established by reliability analysis using Scale Test which gave a result of the Cronbach's alpha coefficient of 0.823, giving indication that the instrument was reliable.

### 3.7.8  Data analysis

The researcher performed data cleaning to ensure completeness and internal consistence by double checking the data by re-entering then using frequencies to check for correct entry of the data. The data were analyzed using the software SPSS 15.0 for windows where descriptive statistical analysis was done to express the independent variables as frequencies and percentages. Inferential statistics were done to determine relationships between different variables.

### 3.7.9  Statistical analysis

Chi-square analyses were done to investigate the relationship between different independent variables with the occurrence of LBP in the present study. The variables tested included: average manual lifting, average patients transfers, average number of lifting per day, frequent work posture, average minutes spent in maintaining static posture, frequent job activities, job responsibilities in the present department, knowledge about back care techniques and use of the back care techniques. However, all the analyses were adjusted for the confounding effects of participants' career duration, age, gender, BMI ratio, smoking behavior and regular exercises on leisure time. Furthermore, a binary logistic regression model was used to calculate odds ratio (OR) for the work factor found significant in the Pearson's chi-square test. The 95% confidence intervals were estimated. All the tests were done at the 0.05 significance level.
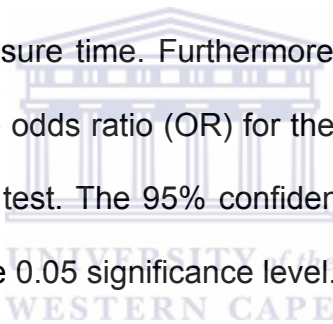
## 3.8  PART TWO OF THE STUDY: QUALITATIVE COMPONENT

The qualitative part of this study was used to compliment the quantitative data. It was used to explore deep responses about barriers to effective back care in clinical nurses.

### 3.8.1  Sampling method

Purposive sampling was utilized to select participants for the focus group discussions. Willing participants were asked to give their contact numbers during

the quantitative part of the study. Participants were requested from the three different groups namely; nursing officers, enrolled nurses and nurse assistants. Arrangements were then made for a convenient time and venue for the focus group discussions.

### 3.8.2  Sample size

A purposeful sample constituting three (3) focus group discussions one from each group of nurses i.e. nurse assistants, nurse midwives, and nursing officers was selected. The focus group discussions consisted of 6 - 8 participants. There was an average of 2 males per focus group.

### 3.8.3  Data collection procedure

Focus group discussions were conducted with the willing participants at a convenient time decided upon by the group. Permission was obtained from the hospital administration to conduct the focus group discussions in the conference room within the hospital. The venue was found to be convenient and central to all the participants i.e. those who were starting, finishing, and continuing with their work shift after the interview.  Participants were asked to participate in the focus group discussions and a consent form was given in advance for them to sign prior to the day of interview. The research assistants were made to understand that the information shared in the focus group sessions was confidential. Willing participants met at the agreed venue and were assured about the confidentiality of the information they gave and that no names would be referred and no one would be identified by statements made. The discussions proceeded until

saturation for about 40 minutes to 1hour. A probing technique was used to clarify the participants' responses and to obtain more information (Britten, 1995). The discussions were tape-recorded with permission from the respondents. The researcher facilitated the discussion while notes were taken by the trained research assistant. The discussions were conducted in Kiswahili.

### 3.8.4  Research instrument

A semi-structured interview guide was used to direct the interview (Appendix N).The first question was "Tell me the measures you take to protect your back during your nursing practice? The question was used as an inspirational question to build up rapport, to conquer initial nervousness to the participants as well as to the facilitator, in order to allow smooth discussion. The second question focused on the barriers that are encountered in the implementation of the back care techniques in the nursing practice. While the last question focused on their views, opinions and feelings about the discussed topic.

### 3.8.5  Trustworthiness

To ensure trustworthiness of the recorded data, the tape was replayed at the end of each focus group discussion for participants to verify that the records contained the discussion. The data was triangulated through the use of the field notes, transcripts and the quantitative data, which was also used to establish trustworthiness. The principal researcher translated the interviews which were in Kiswahili language to English. The participants' words were interpreted and

quoted verbatim. Moreover, a peer review by the project supervisor at every stage of the research project, further assured the trustworthiness of the findings.

### 3.8.6  Data analysis

Data analysis identifies the meaning in the information gathered in relation to the purpose of the study (Rubin & Rubin 2004).  Data were analyzed manually.  After interviews, the field notes were transcribed. The content of the transcribed notes were read and the audio tapes was listened to several times to familiarize the researcher with the content and to understand the data (Marshall & Rossman 1999). The process involved identifying codes then looking for commonalities, categorizing, and identifying themes that emerged from the recorded data.
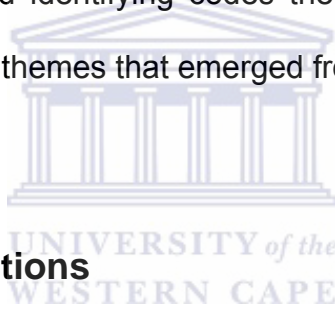
## 3.9  Ethical considerations

Senate approval was granted by the Faculty's Higher Degrees Committee of the University of the Western Cape before the study commenced (Appendix A). Further permission was obtained from the Ministry of Health and Social Welfare (Appendix C), and the Management of the Muhimbili Othorpaedic Institute (Appendix G), Tanzania. Research clearance to conduct the pilot study was obtained from the Muhimbili National Hospital (Appendix E). Participants were informed of the study verbally and in writing through an information statement form which clearly explained the aim of the study as well as the benefits to the participants (Appendix H). Willing participants were requested to confirm their voluntary participation by signing a consent form (Appendix J). They were

assured of their right to withdraw at any stage of the study without any negative effect. They were also assured of high confidentiality of the information obtained. They were requested not to indicate their names or any identifying marks on the survey forms to ensure anonymity for the quantitative data. Permission was sought for recording the focus group discussions and participants were granted respect in issues they considered to be sensitive. They were also again ensured of the confidentiality of the information offered.

## 3.10  Summary

The chapter described the research setting, study design and sampling methods. The methodological approaches and the motivation for the choice of the methods were explained. The instruments used in data collection, procedures followed and data analysis was also described. The chapter ended with explanation on the ethical clearance procedures. The next chapter will focus on the findings of the study.

# CHAPTER FOUR

# RESULTS

## 4.1 Introduction

In this chapter, the quantitative and qualitative results of the study are presented. The first part describes the results from the quantitative part of the study while the second part describes and interprets the results from the qualitative part of the study. The quantitative results include the socio-demographic characteristics of the study participants, job profiles and the prevalence of low back pain among nurses at the Muhimbili Orthopaedic Institute. The knowledge and effectiveness of back care techniques, as well as the barriers to effective back care in the participants' work practice is described. Statistical analysis was done to explore the relationship between different predisposing factors for LBP among the participants. Descriptive and inferential statistical analysis was used for the quantitative data and results are presented with the aid of tables and graphs. The qualitative data were analyzed under categories and themes.

## 4.2 Part one of the study; quantitative component

### 4.2.1 Participation rate

Of the total population of 318 nurses, only 293 nurses met the inclusion criteria for the study, as 25 of them were newly employed and practiced for less than three months by the time of the study. A total of 293 questionnaires were distributed and 171 questionnaires were returned from the willing participants

thus yielding a 58% response rate. Reasons for nonparticipation were absence due to normal annual leave, sick leave, maternity leave or lack of time over the two weeks. However, some of the nurses could not be contacted because of the changing shifts and others were not willing to participate.

### 4.2.2 Socio-demographic characteristics of the participants

Of the 171 nurses, 83.6% were females and only 16.4% were males. The gender profile indicates that, female nurses were approximately five times more than the male nurses in the sample.  The mean height of the participants was 160.73 centimeters (SD. 11.53), ranging from 135 – 229 centimeters. The participants' body weights ranged from 49 – 97 Kilograms, with a mean weight of 68.81kg (SD. 10.88). The average BMI of the participants was 26.95Kg / m² (SD= 4.86), ranging from 15.03 to 41.98 kg/m². The participants' age ranged from 21 – 60 years, with a mean age of 35.9 years (SD. 8.93). The majority of the participants were in the age groups between 21-30 years (36.3%) and 31-40 years (36.8%), while those in the age group between 41-50 years accounting for 19.3% and participants aged between 51-60 years were the least in the sample (7.6%). The results in relation to smoking habits indicated that only 2.3% of the participants reported that they smoked. Fifty-six percent of the nurses in the study reported exercising regularly (Table1). The reported average minutes per week spent for exercise was 91minutes, SD= 48.

Table 1: Socio-demographic characteristics of the participants

| | Gender | | Total n (%) |
| --- | --- | --- | --- |
| | Female n (%) n = 143 | Male n (%) n = 28 | N =171 |
| **Age (N=171)** | | | |
| 21 - 30 years | 55 **(38.5)** | 7 **(25)** | 62 **(36.3)** |
| 31 - 40years | 57 **(39.9)** | 6 **(21.4)** | 63 **(36.8)** |
| 41 - 50 years | 25 **(17.5)** | 8 **(28.6)** | 33 **(19.3)** |
| Above 50 years | 6 **(4.2)** | 7 **(25)** | 13 **(7.6)** |
| | | | |
| **BMI (N= 158)** | | | |
| <18.5(Underweight) | 2 **(1.5)** | 3 **(12)** | 5 **(3.2)** |
| 18.5-24.9(Normal wt) | 42 **(31.6)** | 6 **(24)** | 48 **(30.4)** |
| 25-29.9 (Overweight) | 58 **(43.6)** | 10 **(40)** | 68 **(43)** |
| 30 & >30 (Obesity) | 31 **(23.3)** | 6 **(24)** | 37**(23.4)** |
| | | | |
| **Smoking (N=171)** | | | |
| Yes | 2 **(1.4)** | 2 **(7.1)** | 4 **(2.3)** |
| No | 141**(98.6)** | 26 **(92.9)** | 167**(97.7)** |
| **Regular exercise (N=171)** | | | |
| Yes | 73 **(51)** | 23 **(82.1)** | 96 **(56.1)** |
| No | 70 **(49)** | 5 **(17.9)** | 75 **(43.9)** |

### 4.2.3  Job profile of the study participants

The majority of the participants were nurse assistants (48.5%), and nursing officers (45%), whereas enrolled nurses were the least (6.5%) in the sample. Participants in the sample (N=171) were from various sections of the hospital which included; male wards (17%), female ward (10.5%), pediatric ward (9.9%) and private wards (19.9%). While the remaining were recruited from other sections of the hospital including emergency unit (11.1%), out patient department (2.3%), operating theatre (16.4%), intensive care unit (8.2%), and sterilization unit (4.7%) together accounted for 42.7% of the total sample.
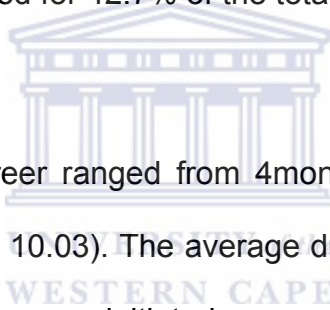
Duration of participants' career ranged from 4months - 43 years with a mean duration of 11.64 years (SD. 10.03). The average duration worked in the present ward/section before change was initiated was approximately 50.06 months, ranging from 1–348 months (SD. 60.87). The results indicated that most of the nurses do stay in the same work section/ward for a long time before change. However, more than half of the nurses (53.2%) in the study sample have worked for less than 10 years and 25.7% have worked for 10 -20 years while 21.1% have worked for more than 20 years.

Table 2 below gives a summary of the participants' age group distribution in the different work departments. The highest number (28.6%, n=63) of the nurses in the age group 31– 40 in the sample was recruited form the private wards. While the majority (22.6%, n=62) of nurses in the age group 21-30 were from the male wards (general). There was no participant aged 41-50 from the sterilization unit. The sample had no nurses older than 50 from the OPD and ICU sections.

## Table 2: Age group frequencies by work department

| Work department | Age groups of participants | | | | Total n (%) |
|---|---|---|---|---|---|
| | 21-30 years n (%) | 31–40 years n (%) | 41–50 years n (%) | Above 50 years n (%) | |
| Emergency unit | 3 (4.8) | 7 (11.1) | 8 (24.2) | 1 (7.7) | 19 (11.1) |
| Private ward | 8 (12.9) | 18 (28.6) | 7 (21.2) | 1 (7.7) | 34 (19.9) |
| Outpatient department | 1 (1.6) | 1 (1.6) | 2 (6.1) | 0 | 4 (2.3) |
| Operating theatre | 13 (21) | 10 (15.9) | 3 (9.1) | 2 (15.4) | 8 (16.4) |
| Intensive care Unit | 6 (9.7) | 6 (9.5) | 2 (6.1) | 0 | 14 (8.2) |
| Sterilization unit | 2 (3.2) | 4 (6.3) | 0 | 2 (15.4) | 8 (4.7) |
| Female ward (general) | 7 (11.3) | 8 (12.7) | 1 (3) | 2 (15.4) | 18 (10.5) |
| Male ward (general) | 14 (22.6) | 7 (11.1) | 5 (15.2) | 3 (23.1) | 29 (17) |
| Pediatric ward | 8 (12.9) | 2 (3.2) | 5 (15.2) | 2 (15.4) | 17 (9.9) |
| Total n (%) | 62 (100) | 63 (100) | 33 (100) | 13 (100) | 171 (100) |

### 4.2.4 Prevalence of LBP

The prevalence of LBP in the current study was 73.7% (n=126) with a 95% CI (67.1 – 80.3). Of those with LBP, 84.13% (n=106) were among female nurses and 15.87 % (n=20) among male nurses.
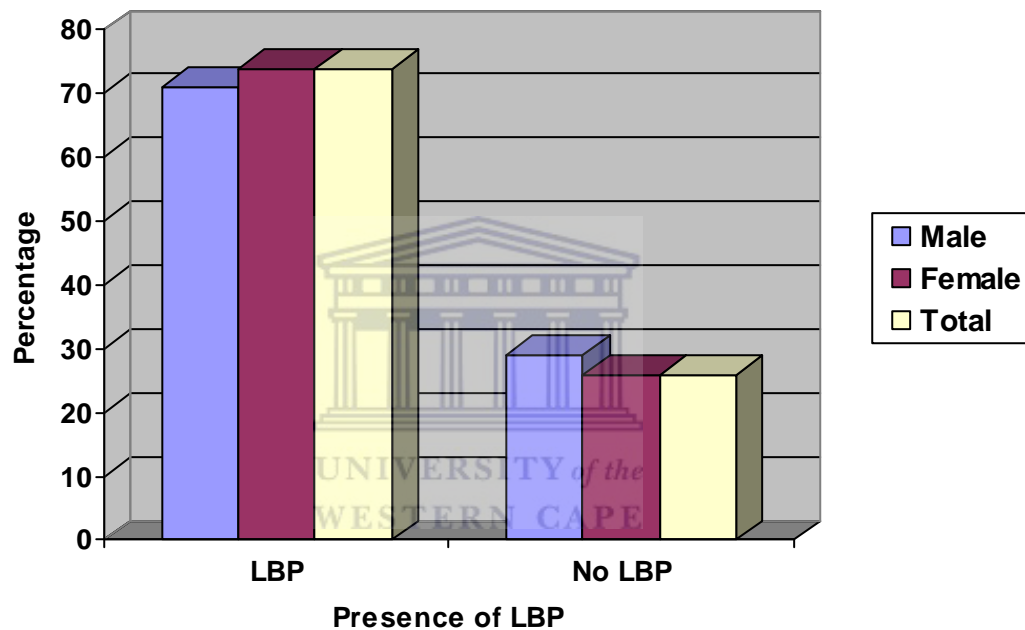


**Figure 1: Low back pain according to gender**

### 4.2.5 Body part discomfort rating

Results in relation to body part discomfort rating, a 10 point scale; (1-no discomfort to 10–very severe discomfort) was used to rate discomfort they felt at the end of the shift. Low back had the highest discomfort scores, marked by 69.9% of the participants with 24.6% reported to experience moderate discomfort, 24.6% strong discomfort and 12.3% very strong discomfort. The neck

and the right lower leg had the same discomfort score (35.7%). The summary of the discomfort ratings is shown in figure 2. The figure illustrates that apart from high prevalence rate of the LBP, individuals in the studied population also suffer from multiple musculoskeletal symptoms in various body sites.
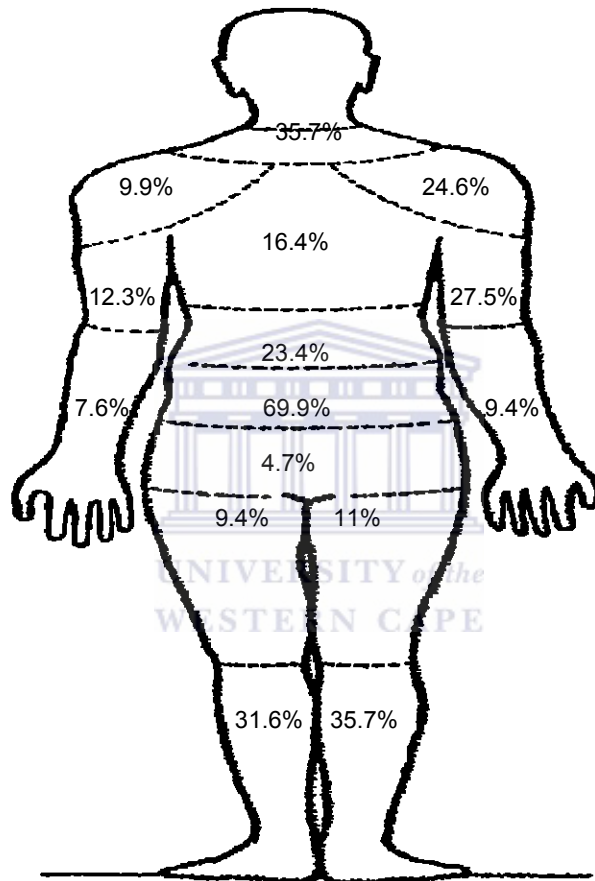


**Figure 2: Body part discomfort rating by percentages (N=171)**

The results of the present study indicated that, of the 126 nurses who reported to have suffered LBP in the past three months, 60 (47.6%) were nurse assistants/ medical attendants, 10 (7.9%) enrolled nurses and 56 (44.4%) registered nurses.

## 4.2.6 The perceived causes of LBP

The causes of LBP identified by the respondents were sprains and mechanical problems linked to their job activities (96%). Only 4% considered other causes like obesity and factors not related to work environments. Majority (69.6%) of the nurses in the study sample reported to be involved in direct patient care services. These included bed-making, bed-bath, giving /collecting bedpans from patients, patient feeding, patient turning/ positioning, medication and observation of patients. Forty two percent of the participants indicated to be involved in work tasks demanding prolonged static postures like wound dressing, assisting in operation procedures and P.O.P bandaging. Those who reported to be responsible for cleaning, mopping, wastes disposal, and, collecting and preparing patients' clothes/ sheets for laundry in their routine job was 37.4%. In addition to other work tasks, 28.7% of the study participants reported to be involved in administrative duties in their respective work sections.

The reported average manual lifting weight per day for the total sample was 125Kg (SD.191.5). The most frequent manual patient transfers in the participants' routine shifts were transfers from bed to chair and vice versa with a mean= 4.98 (SD= 12.7) number of transfers. The average lifting frequency from lower level was 5.3 (SD= 13.34), average pushing techniques was 8.95 (SD= 29. 78) and average pulling techniques was 7.74 (SD= 53).

### 4.2.7 Participants' work Postures and activities

The different postures identified as frequently used in their routine job activities included 7.6% kneeling on one knee, 4.6% kneeling on knees, 12.3% standing with trunk rotated, 55.6% standing with trunk flexed and 19.9% standing with trunk rotated and flexed. Refer to figure 3.
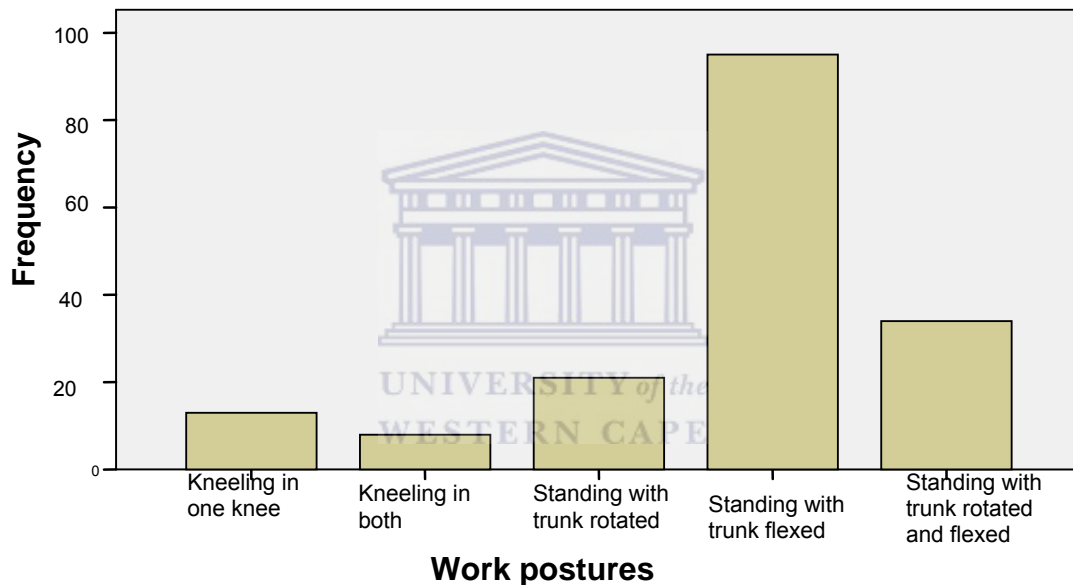


**Figure 3: Participants' work postures**

Participants indicated that the average duration they spend in maintaining a static posture before a break or change in position was 23.34 minute (SD= 47.94), ranging from 0 – 480 minutes. Frequent activities of nurses at work as indicated in the check list are; 48% stoop lifting and lowering, 11.1% squat lifting and lowering, 11.1% asymmetric lifting and lowering and 29.2% pushing and pulling.
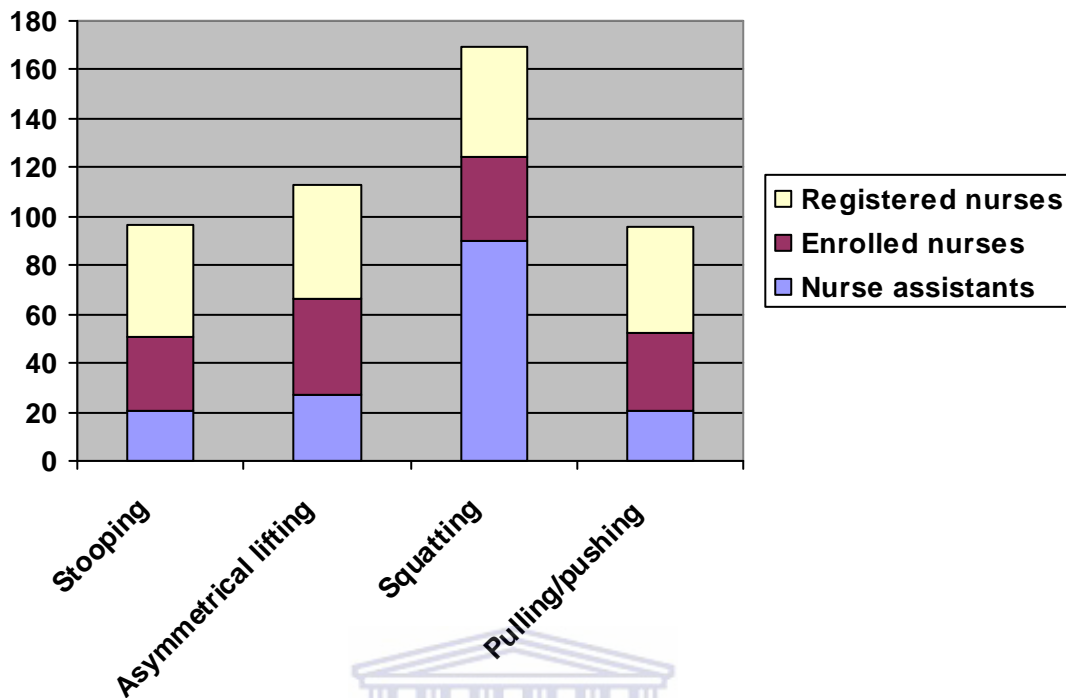
**Figure 4: Participants' frequent work activities**

There was a significant positive correlation between nurse's post and participants' frequent work activities (r=0.181, p= 0.018).

### 4.2.8  Knowledge and effectiveness of back care techniques

The percentage of participants that indicated to be knowledgeable about the back care techniques was 49.7% and 50.3% indicated to be unknowledgeable and/or unaware about any back care techniques. Back care techniques mentioned by the respondents (n=86) were the use of correct body mechanics (21.1%), lifting together as a team, active patient to actively lift, using devices for lifting and transferring (17.5%). The remaining 7% indicated the use of asymmetric lifting while 4.7% indicated other techniques which were irrelevant.

Of those who reported to be knowledgeable about the back care techniques, almost 60% were inconsistence in applying the techniques in their job practice. Only 38% reported to be consistent in implementing the back care techniques in their job practice, and 2% reported to have never applied the techniques in their practice.

Majority (69.9%, n=83) of the nurse assistants and enrolled nurses (63.6%, n=11) reported to be unknowledgeable about the back care techniques while among registered nurses only 27.3% (n=77) reported to be unknowledgeable.
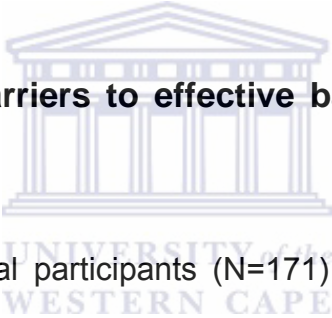
### 4.2.9 Reasons for inconsistent use of back care techniques in the participant's job practice.

Forty eight (28.7%) of the total study participants (N=171) responded to the above question. The participants' perceived reasons for inconsistent use of back care techniques were; lack of knowledge and training, shortage of staff to assist with lifting or transfers, lack of assistive devices, lack of adequate space to apply the techniques, forgetting to use the techniques. Not enough time to use techniques for quick transfers, too heavy patients/ objects for the staffs to lift or transfer, too many patients for the staffs and that it is a nature of nursing job, they must bend their backs.

Of all the work risk factors examined, only inconsistent use of the back care techniques had a significant relationship with LBP (p-value = 0.014) at a alpha level 0.05. When investigated by logistic regression, consistent use of the back care techniques was taken as a reference group while seldom/never was the comparing group. However, nurses who reported seldom or never use of the back care techniques in their work activities had increased risk of LBP three times more when compared to nurses who were consistently using the techniques (odds ratio 2.9, 95% confidence interval 0.1 – 0.8, p=0.042).

## 4.2.10 Perceived barriers to effective back care in participants' job practice

Forty nine (29%) of the total participants (N=171) responded to the question. Twenty six (15.2%) of the respondents indicated that there are barriers encountered in implementing back care techniques in their nursing practice. Participants perceived the following as main barriers to effective back care; shortage of staff to assist with lifting or transfers, lack of assistive devices and environmental hindrances (space, patients lying on the floor, overcrowd of patients in the wards). Other barriers indicated were; patients or objects too heavy for the staff, too many patients for the staff, and insufficient time for quick transfers.

## 4.3   Part two of the study: qualitative component

The participant's responses were transcribed verbatim, coded and categorized. The qualitative section was led by a semi-structured interview guide. The themes and categories that emerged from the transcripts are summarized in Table 3.

Table 3: Themes and Categories

|    | Theme | Categories |
|----|-------|-----------|
| 01 | Knowledge on back care Techniques | Types of lifting techniques |
| 02 | Barriers to effective back care | Lack of training<br><br>Work  environment conditions<br><br>Poor facilities<br><br>Shortage of staff<br><br>Working hours and placement logistics<br><br>Lack of assistive devices<br><br>Attitudes<br><br>Knowledge versus behavior |
| 03 | Uncertainty about the future | Fear of  being disabled and despair<br><br>Security and social support |
| 04 | Participant's recommendations | Training/seminars<br><br>Improvement of the working environment<br><br>Risk allowance/incentive<br><br>Lifestyle changes |

### 4.1.1 Knowledge on back care techniques

The results of the qualitative data indicated that most of the participants had knowledge about the back injury prevention techniques, but the knowledge did not influence their behavior. Some of the respondents reported never having received training regarding back care techniques. However, some had received training during their basic nursing course but had forgotten about the techniques and thus could not implement them. The majority of those who had never been trained were nursing assistants. The extracts from the interviews support the results of the quantitative part of the study. The participants' responses are described below under one category.
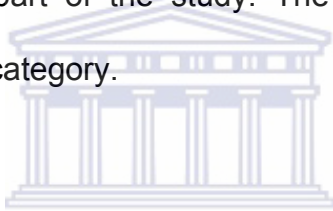
### 4.3.1.1 Lifting techniques

**A5:** "*The methods which I know are; first if a patient is to be lifted, we can assist each other by doing the lifting two or more people. And if the patient is to be transferred from the vehicle also two or more people are always needed to perform the task*"

**B2:** *"I think use of 'body mechanics' is the best way to rescue the back and the equipments are of more help because if there are no equipments you must be many to do the task….."*

*C3: "……we normally use "body mechanics" in protecting the back and we ensure that we apply those principles in lifting or lowering a patient."*

### 4.1.2  Barriers to effective back care

Majority of the participants from all the FGDs expressed that there are impediments to back care implementation in their routine nursing activities. Their responses fall under four main categories; lack of training, work environment conditions, attitudes and knowledge vs. behavior.

### 4.3.2.1  Lack of training

Majority of the participants expressed that they had training about back injury prevention techniques during their basic professional training except some of the nurse assistants. The following quotations express their responses:

**A4: "***…….we came to know the techniques after we were injured, that's why I tell you that we who are here are the ones who have already suffered back pain; hence what we are doing here is to prevent further injuries".*

The participant added: *"…but knowing the techniques before injury, I think none of us had that in mind".*

## 4.3.2.2   Work environment

During the discussions, there was a similar trend of expression in all the FGS groups regarding work environments as an impeding factor to their effectiveness in applying back care techniques. The work environment conditions appeared in four main aspects.

## 4.3.2.2.1   Poor facilities

Participants indicated that work environments were poor and had no some basic facilities. Participants during the focus group interview had the following to say:

*A4: "I try....but it is also difficult because the working environments are not conducive in relation to the measures of observing back care. The work conditions are difficult and the work itself is difficult too…."*

*A1  ":… if you consider mops for a example, all are short, you must bend when you are mopping, similarly when mopping you must scrub and move equipments, when carrying rubbish vessels/bins to dispose/ empty,  are heavy and you have to lift and carry them, then reaching to the place, you must bring them down again…! And about wheelchair ambulant patients, you bend to push them".*

*C5: "….and most especially those patients lying down on the floor (because beds are full occupied) which means you have to do*

*wound dressing right there…..And you have to lift him /her right from*

*there to x-ray..."*


#### 4.3.2.2.2   Shortage of staffs

Excerpts from the qualitative data support the results of the quantitative component. The participants' responses from all the FGD's expressed similar impression of their perception that their working environment stands as an impediment to effective back injury prevention. When expressing their experiences with work situation, they had the following to say:

*C1: "….you can find that there are so many patients and the manpower is not enough. So you will just have to provide service to all of them, and you can find that you are serving more than ten patients. Consequently, even if you are trying, you can not succeed to protect your back as you will be getting tired but have to continue to serve the rest who are still there unattended".*

*A5: "sometimes in the wards nurses are very busy, there can be a shortage of staffs, you are few in the shift, and the patient has rang a bell…and there is no fellow nurse to assist with the task ……in such a situation you decide to do it alone with difficulty….."*

*B6: "Personally, I think that the first hindrance is staffing, the number of personnel is not enough"*

### 4.3.2.2.3  Working hours and placement logistics

During the interviews, participants from two discussion groups expressed their concern about the long duration of the working shifts to be one of the straining factors and thus, a hindrance to their implementing back care principles. However, these could not appear in the results of the quantitative part of the study. The following excerpts express their responses:

**B4: "…..***It depends on how you are allocated, because you can be allocated …….with others who are pregnant…..Or sometimes with those who have back problems, they can't lift patients".*

*C4: "…work shifts are too long for nurses as compared with work environments and nature of our work. Thus, if a nurse is able to care 50 patients from morning up to 1:00pm the mind becomes tired, so what will come next? She/he is tired and even the back is also tired".*

And the participant added:

*C4: "…the time we stay at work is too long; if we had enough time to rest at least back protection could be possible. But we spend a lot of time in the work environment standing, seated or stooping for a prolonged time. All these make us fail to protect our back as we should be".*

**4.3.2.2.4  Lack of assistive devices**

The extracts match with the results of the quantitative part of the study. Several participants from all the FGD interviews described how lack/insufficiency of assistive devices negatively influenced their efforts to comply to back care principles. During the interviews the respondents had the following to say:

C5: **"***There are no equipments, we do use our own strength and we are the equipments".*

*C3: "........ for a example at the emergency unit, most of the patients we receive need to be taken from the ambulance then taking him/her to X-ray…. there are no sliding boards which can be regulated or adjusted according to the preferred size……. to the X-ray table is another problem as the stretcher and X-ray table are not in same level (height)".*

A2: **"***Techniques are difficult to be applied because even the equipments and assistive devices do not work efficiently".*

**4.3.2.3  Attitudes**

In addition to other barriers perceived by the participants in the study, their responses had also expressed attitudinal barriers towards implementation of back prevention techniques in their job practice. The attitudes articulated

included the attitude of defeat and keeping work ethics. The following quotations convey their feelings:
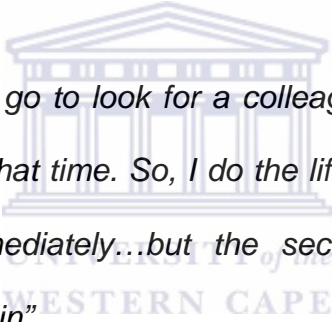
*A5: " …..nursing job / profession is a "calling job", consequently there is not any technique which you can use to ……..may be not to be affected …it becomes difficult because nursing is a" calling job "that's why it is difficult to avoid to do this and that…may be a patient is laying down on the floor, to lift him / her is difficult but you have to do it because you have accepted to be a nurse to help patients".*

*C2: "Another thing which is happening in us is that we work to finish the work. You try all means possible to finish the work. For example the patient has asked you for help... So, getting them (colleagues) to assist you takes time, and at the same time you want the work to be done. We just do it that way without considering the techniques".*

*A2: "But even if the adjustable beds are available, you will still be required to bend down to press the button to adjust or push / pull the bed, and if is a machine you will definitely bend your back to press or lift the bed and the...to…continue with your task after which you will again bend to lower the bed down. I think there is no means of escaping it…"*

### 4.3.2.3    Knowledge versus behavior

Further, the results of both; quantitative and qualitative parts in the present study indicated that the majority of the participants were knowledgeable about the principles of back injury prevention. Some from their basic nursing training and others when attended physiotherapy after they had back injury. Conversely, the knowledge could not influence their behavior as most of them were not consistent in practicing those principles due to some reasons related to their personal behaviors. During the focus group interviews participants responded as follows:

*A5:* *"….and even if you go to look for a colleague to help you, you may not get her/him at that time. So, I do the lifting alone…one may not feel the pain immediately…but the second day, third day thereafter will feel the pain".*

*A4:* **"…***even if you are told that working while bending your back will injure your back, but ….because you have not yet suffered and the work itself forces you to do it in that way...."*

*C4:* *"It is true that one should not apply force while bending, but it will take a long time to accomplish the task. If you have a patient in a situation like this (patients lying on the floor) it will be necessary for you to overlook those principles and suffer back pain".*

### 4.3.3  Uncertainty about the future

Participants narrated how fearful they are in view of the anticipated impact of the back problem in their future life. They expressed their uncertainties in two main aspects as described below:

### 4.3.3.1   Fear of being disabled and despair

The expression and concern emerged regarding the predictable consequences of their job practice and related back injury is a predictable disability and desperate life. In that regard, a participant said:

> **B4***: "… A majority of us are already affected with back injury, and the problem is still there, I suppose that most of us will retire with physical disability and become useless as we will have lost earning capacity.*

### 4.3.3.2   Security and social support

Participants recognized lack of security and social support from the employer and/or government firms with regard to work-related injuries. Two respondents from different discussion groups expressed their feelings as follows:

> **B4;** *"…the worst part of it is the lack of protection as there is no policy which protects health workers in cases of work related cumulative injuries".*

**B3: "…***It (risk allowance) might not help improve the situation, but on the other side it would create hope in those employees as currently there isn't any form of insurance cover to protect injured nurses".*

### 4.3.4  Participants' recommendations

In response to the closing question "what are your general additional comments concerning the topic?' the participants voiced their recommendations and opinions as described below.

### 4.3.4.1  Training seminars

**A1: "***I would suggest that, the Institute could first plan to educate a person even before bringing the equipments, because the ordering of the equipments might take up to ten years to get them for use, and at the same time you continue to suffer back injuries.  Therefore, the Institute should consider providing training to its personnel on how to prevent back injuries in their job activities".*

**B2: "***They should also give us training on how to lift patients. As we're speaking, we already suffered injury, but it may be useful for our fellows to know the proper lifting techniques. The training may help them to ensure that they do not leave this place (retire) while injured (back) as we do".*

And participant from another FGD emphasized:

>  **C4:** *"I suggest that there should be a training, training...on how to prevent back injury, I mean let there be a continuous education to keep us reminded on how to protect our backs as we serve patients".*

### 4.3.4.2   Improvement of the working environments

Participants expressed a need for the supportive work environment for them to be able to care for their backs. As one participant in the focus group discussion stated:

>  **A5:** *"…I think another way to make things better is for the Institute to provide us with long mopping sticks so that we may not bend when mopping".*

From the interview data two participants were of the opinion that their administrators should be considerate on placement logistics. The following quotations convey their expressions:

>  **B5:** *"…those who prepare duty rosters should consider balancing, for instance, if there are five people with problems in that particular ward, they should not be placed in one shift or one day..."*

>  **C1:** **"***My opinion is, if there could be a possibility to increase manpower…and at the same time if the equipments were available,*

*that would help us …Also if we had more time to rest, say I work up*

*to 1:00 o'clock and I go off …"*

### 4.3.4.3   Risk allowance / incentive

The interview respondents expressed their opinions that the employer(s) and probably the responsible ministry should consider risk allowance for nurses as they are working under high risk environments. The following quotations convey their feelings and opinions:

**B1:** *"… I suggest there should be motivation in terms of payment of*

*risk allowance which will assist in medical care".*

**B3:** *"...payment of risk allowance will give us a sense that we are*

*being cared for, just an incentive… ("Angalau kifuta machozi"…)".*

### 4.3.4.4   Lifestyle changes

One participant made a comment that nurses themselves need to be conscious of and adjust some of their lifestyles for instance diet. The following extract expresses her feelings and opinion:

**A7***: "We are told that even eating and the type of food you eat can*

*have an impact to our backs, because if you are overweight, it brings*

*pressure on your back, thus makes it easier to experience back pain*

*of which will also be difficult to recover well ………..".*

## 4.4    Summary

In this chapter the results of the mixed methods were presented. The results of the quantitative part as well as the qualitative part of the study were described. The prevalence of LBP among the clinical nurses in the present study was found to be 73.7%. The Chi-square test identified the inconsistent use of back care techniques as the only significant factor related with LBP in the present study. Logistic regression was done to determine odds ratio for the use of the back care techniques. The findings indicated that nurses who were inconsistently or never use the techniques had increased risk of sustaining LBP by three times as compared to those who were consistently using the techniques.  The results indicated that almost half of the study participants had had training and were knowledgeable about the back injury prevention techniques. However, they were not effectively implementing the techniques in their practices as only 38% reported consistent use. The knowledge and barriers to effective use of back care techniques were confirmed in the qualitative part of the study. The qualitative results further identified additional factors described by participants as barriers to implementation of back care techniques in their job practice. These were; lack of training, working environment conditions, personal attitudes and behavior in opposition to their knowledge. The next chapter discusses the findings of the study.

# CHAPTER FIVE

# DISCUSSION

## 5.1   INTRODUCTION

This chapter discusses the results of the study in relation to the research question, aims, and objectives of the study. The discussion refers to the study findings from both the quantitative and qualitative data as compared where appropriate with similar studies. The objectives of the study were:

 (1) To determine the prevalence of LBP among the clinical nurses;

(2) To determine the occupational factors associated with LBP in nurses;

(3) To examine knowledge and effectiveness of back care techniques among clinical nurses; and

(4) To determine barriers to effective back care among clinical nurses.

An additional issue that emerged from the study, nurses' uncertainty about the future, will be discussed as a separate factor at the end of the chapter.

## 5.2   Prevalence of LBP

The present study is based on a three month prevalence of LBP in the population of 171 clinical nurses at MOI in Tanzania. The study findings revealed a high prevalence rate (73.7%) of LBP amongst nurses in the studied population.

The results of the current study were higher than the findings of earlier studies on this issue from different countries. The findings of the study conducted in the United Kingdom (Smedley *et al.*1997) reported a prevalence of 33.1%. In China it was reported that a twelve month prevalence of LBP among nurses was 40.6% (Yip, 2001), while in rural Japan an annual prevalence of LBP was found to be 59% (Smith, Ohmura, Yamagata & Minai, 2003). A study by Yip (2004) on nurses in Hong Kong district hospitals established a twelve month LBP prevalence of 39%. In Canada (Vieira *et al.*, 2006) a 30% point prevalence of LBP and life-time prevalence of 65% was reported among the nurses working in the orthopaedic and intensive care departments. Ando *et al.* (2000) found a 54.7% one month prevalence of LBP among Japanese hospital nurses.

However, the findings of the present study were similar to the findings of a longitudinal study on nurses in Switzerland (Maul *et al.*, 2003) with an annual prevalence range of 73% - 76%. Another study (Omokhodion *et al.*, 2000) on LBP among hospital staff in rural Nigeria established a twelve month prevalence rate of 69% among nurses. A cross-sectional study by Feng, Chen & Mao (2007) reported a 66% annual prevalence rate of LBP among Taiwanese nursing aides. A study from South Africa (Cilliers, 2007) on hospital nurses documented a lifetime prevalence rate of 84% which was higher than the findings of the present study.

Although the present study focused primarily on low back, respondents also reported symptoms in other significant areas. The results are comparable to the findings of similar studies. Vieira, Kumar and Coury (2005) explored musculoskeletal symptoms in computer numeric control workers, welders and orthopaedic nurses using a body part discomfort rating. The authors reported higher score for the lower back as compared to other body sites in nurses. However, their study findings had a similar trend of the musculoskeletal symptoms in other body regions as that of the current study. The results of the current study were in support with the findings of a similar study done in America (Trinkoff, Limpscomb, Geiger-Brown, Storr & Brady, 2003) which reported a significant association between the physical demands and musculoskeletal symptoms of the neck, shoulder and back in registered nurses.
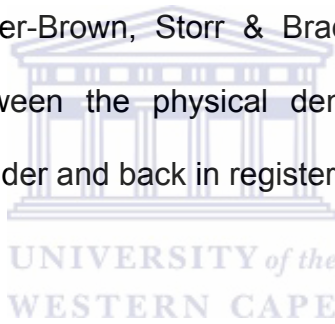
Therefore, the findings of the present study add to the evidence that LBP among nurses in Africa is also prevalent and can be higher than some of the findings from the developed countries.  Although the prevalence of LBP is high in the current study, there is a need to note that studies tend to define prevalence rates differently, depending on whether the period under review was 3 months, 12 months or a lifetime.

## 5.3    Occupation risk factors associated with LBP in nurses

Through the Chi-square test, the study results established a significant relationship between LBP and an inconsistent use of back care techniques. It was determined that nurses who were inconsistent in applying back care techniques were three times more likely to incur back injuries compared to their counterparts. The reported routine activities and responsibilities included: direct patient care, patient transferring activities, job tasks demanding prolonged static postures, and cleaning duties. Considering all these activities it is obvious that nurses are exposed to hazardous occupational environments that can predispose them to back injuries (Knefsey, 2000).
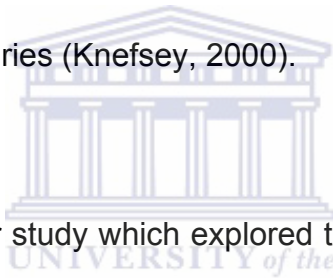
The results support a similar study which explored the usage of body mechanics and the occurrence of low back pain in clinical nurses (Karahan & Bayraktar, 2004). The authors reported that fifty-seven percent of these nurses lifted patients incorrectly, while eighty-two percent extended their arms incorrectly during patient handling. The authors concluded that some of the nurses used body mechanics incorrectly and hence, the majorities suffered from low back pain.

Daynard *et al.* (2001) conducted a randomized controlled trial on the prevention of lifting and transfer injuries among nurses. The study offered the one group education on body mechanics and techniques only, and provided the other group

with patient handling assistive devices in addition to the training. The authors reported a high compliance with the intervention which incorporated mechanical devices as compared to the other group which only received education. The authors further established that the non-compliant intervention group had significantly greater spinal loading. The conclusion here was that effective intervention needs to incorporate more than one approach.

Similar studies identified other factors as contributors to LBP in nurses. A study by Retsas & Pinikahana (2000) established manual handling activities as a factor associated with LBP in nurses. Smith and Leggat (2003) identified other work place factors such as patient handling, work posture and job categories as important predictors of LBP in nurses. The same authors further suggested that limited job control and a lack of social support from colleagues could also contribute to musculoskeletal disorders, particularly LBP. A study by Yip (2001) established a significant association between work stress, manual lifting and LBP. Psychological distress was also found to be a significant predictor of LBP (Feyer *et al.*, 2000). Ando *et al.* (2000) suggested a link between LBP in nurses and the routine work activities related to work postures, work control, and work organization. According to Smith *et al.* (2003) working in a surgical department was associated with an increased risk of musculoskeletal injuries in nurses, especially LBP. Other studies established organizational, psychological and social work factors as independent predictors of LBP in nurses (Yip, 2004; Eriksen, Bruusgaard & Knardahl, 2004). The same authors identified a perceived

lack of support from colleagues and superiors, and poor relationships among workers as specific social work factors responsible for the development of LBP in nurses.

## 5.4 Knowledge and effectiveness of back care techniques among the clinical nurses

Nursing staff who can effectively apply the knowledge attained on back care techniques to their daily practical activities are the ones who can benefit positively from such knowledge. The third objective of the study was to determine knowledge and effectiveness of back care techniques. The findings demonstrated that fifty percent of the participants reported to be informed about the risk factors for back injuries and the preventive techniques to be utilized. The reported back injury preventive techniques were: use of body mechanics, mechanical assistive devices, and team-lifting/assisting each other. Implementing knowledge in practice by assessing the risk, observing proper postures and applying other back injury preventive measures should be considered as of paramount importance. Only thirty-eight percent of the well-informed participants in the study reported consistent use of the back care techniques. The majority (62%) were therefore inconsistent in applying their knowledge of these techniques.

The results correspond with the findings reported by Guthrie *et al.* (2004) who established that ninety-five percent of nurses in the studied population had been trained in lifting techniques, but seventy-one percent had reported lifting–related injuries. This implies that nurses do not effectively implement the knowledge and skills needed to combat LBP. The findings are also in support of the study by St. Vincent *et al.* (1987) (cited in Charney & Hudson 2004) whose findings led them to conclude that nurses do not use the principles of body mechanics in their daily work.

There are different opinions on the use of back education and training as an intervention strategy to prevent back injuries in nurses. The results of similar studies indicate that intervention approaches based on training and education alone proved to be ineffective in preventing back injuries (Pheasant & Stubbs, 1992; Feldstein *et al.* 1993; Hignett, 1996, 2003). Van Poppel, Hooftman & Koes (2004) reviewed randomized clinical trials scheduled for primary prevention of work-related LBP. The authors had argued that the ineffectiveness of the training and education interventions is based on the reality that, the programmes have been focusing on changing the worker's behavior which is usually difficult to be attained. Other studies found some benefits resulting from the education and training when incorporated with exercise, practice opportunities and mechanical lifting equipments (Li, Wolf & Evanoff, 2004). Other researchers suggest that training could be effective if incorporated with mechanical lifting/transferring devices (Lynch & Freund, 2000). However, Tavafian, Jamshidi, Mohammad &

Montazeri (2007), in a randomized control trial on back education, reported a significant improvement in patients' quality of life. The authors established improvement in three aspects, namely: bodily pain, vitality and mental health. Although there is no convincing evidence that either supports or negates the effects of interventions in reducing low back injuries, prevention and education programmes can assist in minimizing the effects of low back pain.

## 5.5 Barriers to effective back care among the clinical nurses

The fourth objective of this study was to determine barriers to the effectiveness of back care among the clinical nurses. The results demonstrated that the majority of participants who were trained in back care techniques, encountered barriers in their practice. The aspects of perceived barriers to the effective implementation of back injury techniques identified in this study were related to training, work environment conditions, attitudes and knowledge vs. behavior.

### 5.5.1 Training

The results of the current study established that the majority of the nurses did not have enough training on the back injury prevention techniques. This was due to a lack of education during the basic training course or recruitment programme (for nursing assistants and/or medical attendants). However, for others who had received their training several years before, it was evident that there was a need

for refresher courses and more education. This is reflected in the following quote from the data:

**B1: "**….*that was the first year training in 1979, while practicing on dolls, and never had any training after that….. One might fail to implement what was taught from the class because of lack of understanding/ concentration or forgetfulness…..*"

The findings are in agreement with the study done by Kjellberg *et al.* (2003) who found a significant association between ages and work technique safety. The authors suggested that older nurses had poor work techniques as they may have forgotten the techniques over time. There are only a few studies focusing on basic training as a barrier to the implementation of back care techniques.
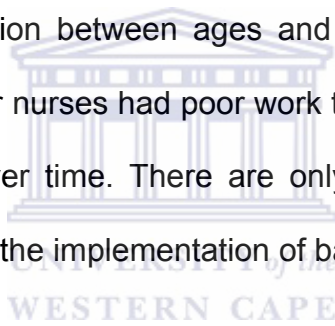
### 5.5.2 Work environment conditions

In this study it was demonstrated that the state of the working environment was a major impeding factor to implementing back care techniques in nurses.

The facilities (mechanical lifting devices), work situation and work organization were not supportive enough to allow the nurses to utilize back care techniques consistently. This was indicated by all the participants (15.2%, N=171) who responded to the question in the quantitative part of the study. The findings were further confirmed during the focus group interviews. The reported overcrowding of patients in the wards, with some of them lying on the floor, makes it difficult to

lift or transfer patients, as nurses must stoop down to perform the task. This implies that the performer has little control over the task and thus is exposed to a higher risk of back injury. The findings also established poorly-functioning and a shortage of mechanical working devices, staff shortages, long working shifts and placement logistics as main hindrances in observing back care techniques in nurses' job practice.

The results of the current study is comparable to the findings reported by Ando *et al.* (2000) who stated that some working conditions compel nurses to assume incorrect postures when performing some job-related activities. This was also supported by Smith *et al.* (2003) who suggested that nurses are exposed to an increased risk of getting MSD including LBP due to a violation of biomechanical principles as a result of unsuitable work conditions.

### 5.5.3   Attitudes

According to Ajzen (1988) attitudes are generally defined as evaluative beliefs which are usually considered to have three components namely; a cognitive, an affective, and a behavioral component.

The study findings demonstrated that nurses have developed some attitudinal barriers towards implementing back care techniques in their job practice. The attitude of defeat was expressed by some of the nurses during the focus group

interviews. They claimed that in some instances, even if they try to protect their backs, the nature of their work will definitely lead to back injuries. This can be explained in terms of the working environment and the work load they have. Nurses therefore have accepted sustaining back injuries as part of their job, thus relinquishing any attempt to apply preventive measures.

Maintaining work ethics was also highlighted as a contributing factor by participants in the study. The results clearly indicated that nurses are forced to perform some tasks that are against biomechanical or ergonomic principles for this reason. In other words, nurses compromise their health to maintain an ethical conduct. This can also be related to the poor and unsupportive environments and unchanged working conditions. It is obvious that nurses must respect their patients and attend to their needs, but at the same time they need to stay healthy in order to perform their tasks, and thus their safety at work is imperative. However, for the latter to be achieved attitudes also need to be changed, together with other environmental and organizational barriers.

A theory in attitude and behavior literature suggests that the environment causes behavior changes which in turn necessitate changes in attitude (Zimeardo & Ebbesen, 1969). The same theory was reviewed by Oshikawa (1969) who asserted that,

"A person has certain cognitive elements which are knowledge about himself, his environment, his attitudes, his opinions, and past behavior. If one cognitive element follows logically from another, they are said to be consonant to each other. They are dissonant to each other if one does not follow logically from the other".

Taylor & Jones (1978) in a study on attitudes and behavior change make the following two propositions:

One: "Attitude change will precede behavior change in those decisions in which uncertainty about the outcome is much greater than uncertainty about consequences".

Two: "Behavior change will precede attitude change in those decisions in which uncertainty about the consequences is much greater than uncertainty about the outcome".

These indicate the complexity of attitudes and their interdependence with knowledge, behavior, environment, as well as individuals' opinions. In view of attitude changes, all these elements should be considered for effective desired outcomes.

### 5.5.4 Knowledge versus behavior

The study findings established that nurses' knowledge and skills on back injury prevention techniques could not influence their behaviors or familiarity in

performing some manual handling activities. This was clearly demonstrated during the focus group discussions when some nurses tried to justify their lack of implementation of back care techniques in practice. The results support the findings of Hignett (1996) that nurses do not adopt the back care techniques in their job practice, which could explain the ineffectiveness of the techniques.

Education is of particular importance in giving patients knowledge about their ailments. However, the attained knowledge alone cannot bring forth the desired outcomes with regard to risk reduction (Nordin, Cedraschi, Balaque & Roux, 1992). Lindell (1994) suggests that behavior is a practical expression of one's knowledge, skills and abilities. This implies that the effectiveness of one's knowledge has to be manifested through one's behavior. Behavior change is an essential part in the sustainability of injury prevention and in maintaining the well-being of workers in organizations (Gotsch & Weidner, 1994; Baker, Israel & Schurman, 1996). This can be achieved successfully if motivation and role perception are considered as indispensable factors in connecting knowledge and behavior change (Lindell, 1994; Bohr & Barrett, 1997). Furthermore, for effective and sustainable individual behavior change, supportive polices and conducive work environmental conditions are essential (Crump, Earp, Kosma, & Hertz-Picciotto, 1996).

## 5.6   Uncertainty about the future

Uncertainty about the future emerged as another factor from the qualitative part of the study. Although it was not one of the objectives of the study, it is nevertheless noteworthy. The study results verified that nurses have fears about their future which they expressed as 'uncertainty'.  Firstly, they were worried about possible future disability. Secondly, they were unhappy, some to the point of desperation, about their current work situation. All those who expressed these anxieties experienced back pains.  The findings are in agreement with the results of a similar qualitative study conducted in LBP patients in which participants illustrated the variable emotions of hope and despair (Corbett, Nadine & Ong, 2007).

The results further demonstrated that nurses who suffer LBP have psychosocial challenges. They feel insecure owing to a lack of social support from their employers and even from the responsible government departments. The anticipated termination of the current medical insurance cover subsequent to their retirement from work is one of the sources of their worries.


## 5.7   Summary

The chapter discussed the major findings of the study in respect to the study objectives. The findings of the present study were compared and contrasted with the findings of similar studies.  Although most of the findings of the current study were in conformity with other research, this is the first study to report on barriers

to effective back care among nurses.  Thus, the results of the present study make a contribution to the literature on the subject.  Moreover, the results of this study established personal attitudes and behaviors among nurses as additional factors to the ineffectiveness of back care in their job practice. It was clear that LBP in nurses is influenced by multi-dimensional factors ranging from personal to occupational aspects. In the following chapter, a summary of the study, its conclusions and recommendations are presented.

# CHAPTER SIX

# SUMMARY, CONCLUSION AND RECOMMENDATIONS

## 6.1  Summary

The purpose of the study was to investigate on the relationship between the occupational physical activities and the prevalence of LBP among the clinical nurses at MOI hospital in Tanzania. The study also examined the knowledge and effectiveness of back injury prevention techniques among nurses in relation to their work practice.  The study employed a mixed research method in which the triangulation was done between the quantitative and qualitative data, and the data from both methods complemented to each other. Total of 171 nurses were recruited from the MOI hospital in the first part of the study (quantitative part). This was followed by the second part of the study whereby three focus group discussions were held with three different categories of nurses namely; registered nurses, enrolled nurses and nurse assistants who participated in the first part of the study.

Low back pain among nurses was highly prevalent (73.7%).  Even though half (49.7%) of the study participants indicated that were knowledgeable about the back injury prevention techniques. Only few of them could use the techniques effectively as majority were not consistent.  The inconsistent use of back care techniques was the only risk factor found to have significant relationship with LBP

among all the occupational physical activities examined. The perceived barriers to effective back care in the participants' job practice were; lack of training (insufficient), working environment conditions, personal attitudes and behavior in opposition to their knowledge.

Furthermore, the results indicated that, nurses are apprehensive about their uncertain future life due to the persistent, progressive back injury problems encountered which is taken as part of their job. Their concern was mainly in two aspects namely; fear of being disabled and anticipated despair, and, lack of security and social support after they retire from work.

## 6.2   Conclusion

The result of the current study demonstrates a relationship between the occupational physical activities and the low back pain in nurses at MOI. However, the actual determinants are multi-dimensional as it involves occupational factors as well as personal attitudes and behaviors. Given the higher prevalence of LBP in nursing population, and its impact according to the ICF measures in terms of impairment, activity limitation and participation restrictions as narrated in the literature. There is a need for hospital management to address the matter and intervention to decrease the possible barriers in order to improve the situation.

## 6.3    Recommendations

Based on the results of the study, the following recommendations are made.

### 6.3.1  Recommendation to the Ministry of Health and Social Welfare

The ministry shoulder consider buying/adding patient lifting/transferring mechanical devices in the budget to help reduce the risk of manual lifting /transferring related injuries to the health care workers.

The ministry of health and social welfare should establish a policy to consider health care workers dealing with routine direct patient handling tasks for their social and security welfare during and after employment period with regard to cumulative work-related musculoskeletal injuries.
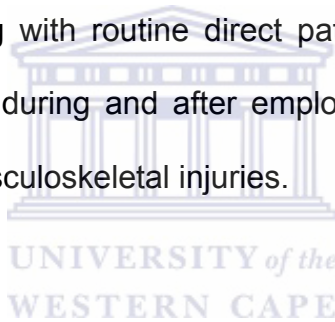
### 6.3.2  Recommendation to the MOI hospital management

The management of the MOI hospital should consider training for all the nurses during recruitment, most especially for nurse assistants, and this should be re-emphasized through the seminars/training programmes at regular intervals.

It is imperative for the hospital management to know that, the long-term effectiveness of back injury prevention in health care workers will require ergonomic approaches together with the training to the personnel. These will include:

- Improving the work environment conditions

- To provide all the necessary mechanical assistive devices for patients' lifting and transferring.

- Providing all the necessary social support in order to create a harmonious working environment for the employees.

Due to the dominance of female nurses in the profession and taking into consideration of their limited ability in performing heavy manual handling tasks, the hospital management should consider employing lifting teams as a long term solution to reducing musculoskeletal injuries especially back injuries in nursing personnel.

### 6.3.3  Recommendation to the hospital physiotherapists

Physiotherapists at the hospital should plan training sessions to inform nurses of the back injury prevention and safe lifting/transferring techniques. These should include; identification, assessment and control of the risk factors to help prevent nurses from sustaining back injuries.

### 6.3.4   Recommendation to nurses

Nurses have to consider their own health as the primary and fundamental if they are to provide quality and efficient service to those they take care of. This should motivate their behavioral and attitudinal change which is their primary responsibility towards patient handling techniques to achieve and maintain a

healthy back. This will also help in reducing risks and impact to nurses themselves, employers, government as well as service consumers (patients).

## 6.4 Limitation of the study

This study was a cross-sectional designs, convenient sampling and had a small sample size, conducted from only one hospital setting. This was due to limited time and financial constraints. Thus, though the outcome of the study was rich due to a strong methodological approach (mixed method); the results can not be generalized to all the clinical nurses in Tanzania.

Hence, further research is warranted to establish the magnitude of the problem in the health care sector of Tanzania. This will require larger scale investigation from multiple settings to increase the power and generalizability. Future studies should also consider possible approaches to decrease the degree of the problem to improve the situation.

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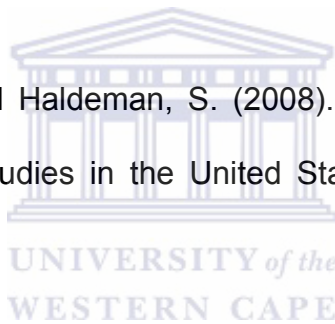
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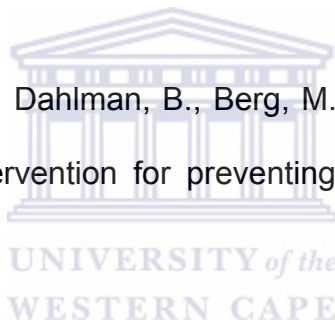
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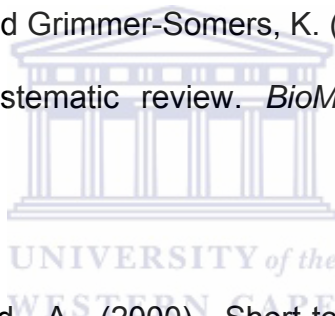
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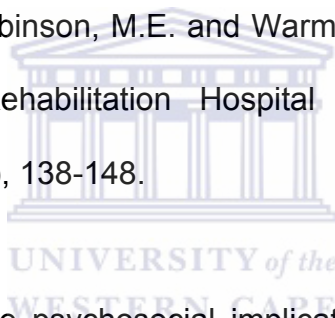
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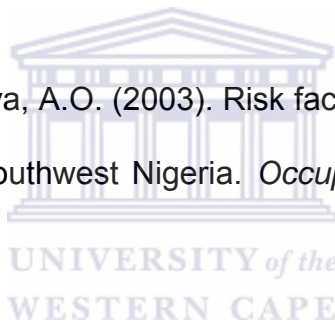
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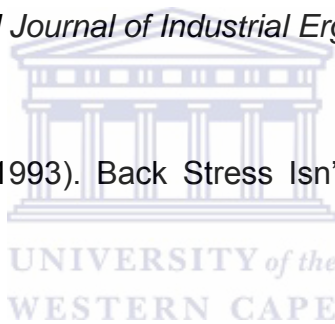
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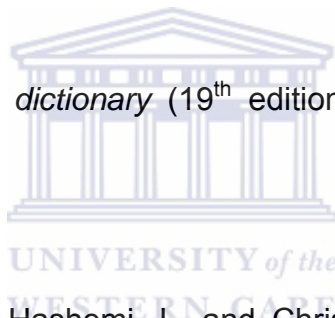
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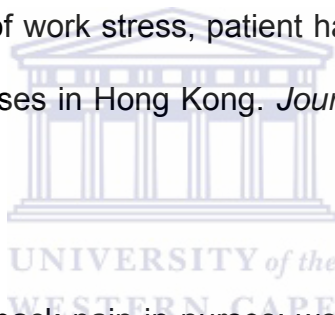
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