OCCUPATIONAL INJURIES AND DISEASES AMONGST HEALTHCARE WORKERS OF THE DEPARTMENT OF HEALTH IN LIMPOPO PROVINCE

by

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RESEARCH DISSERTATION

Submitted in partial fulfilment of the requirements for the degree of

MASTER OF PUBLIC HEALTH

in the

Faculty of Health Sciences

at the

University of Limpopo, South Africa

PROMOTER: PROF. NTAMBWE MALANGU

2012

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DECLARATION

I, _____ declare that the dissertation hereby submitted to the University of Limpopo, for the degree of _____ has not previously been submitted by me for a degree at this or any other university; that it is my work in design and execution, and that all material contained herein has been duly acknowledged.

_____ _____

Signature of student Date

Student Number: _____

DEDICATION

This dissertation is dedicated first and foremost to my parents: Mr Makubu Ephraim and Mrs Esther Ngwanarachuene Makgato who sacrificed their lives to educate me, my three brothers: Chepape, Mautswa, Rankwana and three sisters: Makweya, Mokgadi, and Mosima not forgetting all other cousins. You taught us that the best gift you can give to a child is a tertiary qualification and a driver's licence, thank you.

I also like to dedicate this thesis to my beloved husband Percy and my children: Kabelo and Morongwa Lekgothoane for their love, understanding and support throughout the study period.Sis Thandi, thank you for taking care of my kids with love when I was away from home for both academic and professional reasons.

ACKNOWLEDGEMENTS

I would like to acknowledge and thank God for wisdom, strength and ability to undertake this study, without Him I wouldn't have prospered.

I wish to thank my supervisor, Professor Ntambwe Malangu, who despite his busy schedule has been taking time to continually review my work and advise me accordingly. Your guidance, assistance, critics and encouragement saw me through this project work. Sir, I will forever be grateful to you.

My sincere gratitude goes to the following people:

- Mr Sam Ntuli, the biostatistician, for the continuous support in articulating data and encouragement when it appeared impossible to complete this dissertation. The effort you put into your academic work makes you a real academic role model.
- Mr Joseph Wamukuo, the health economist, for meticulous editing of this dissertation.
- Ms Evah Matabane, the Provincial DHSD COID Officer, for cooperation and patience when collecting data and making follow-ups.
- Provincial DHSD HR Information staff for trusting me with confidential personnel data.
- Lastly, the wonderful staff members in the Department of Public Health Medicine, University of Limpopo (Polokwane), for the resolute support which really provided a very conducive learning environment.

ACRONYMS AND ABBREVIATIONS

BLS	Bureau of Labour Statistics
CC	Compensation Commissioner
CDC	Centers for Disease Control and Prevention
CFSR	Compensation Fund Statistics Report
COID	Compensation of Occupational Injuries and Diseases
DHSD	Department of Health
DoL	Department of Labour
EMS	Emergency Medical Services
HBV	Hepatitis B Virus
HCWs	Healthcare Workers
HCV	Hepatitis C Virus
HIV	Human Immunodeficiency Virus
MDR TB	Multi-Drug-Resistant Tuberculosis
MDGs	Millennium Development Goals
MHE	Medical Health Environment
MVA	Motor Vehicle Accidents
NHI	National Health Insurance
NIOSH	National Institute for Occupational Safety and Health
OHNP	Occupational Health Nurse Practitioner
OHS	Occupational Health and Safety
OHSA	Occupational Health and Safety Act
MRSA	Methicillin Resistant Staphylococcus Aureus
SARS	Severe Acute Respiratory Syndrome
TB	Tuberculosis
US	United States
VHF	Viral Hemorrhagic Fever
WHO	World Health Organization
WHR	World Health Report

SUMMARY

OCCUPATIONAL INJURIES AND DISEASES AMONGST HEALTHCARE WORKERS OF THE DEPARTMENT OF HEALTH IN LIMPOPO PROVINCE

AIM: To analyse and provide data on the incidence of occupational injuries and the prevalence of occupational diseases amongst healthcare workers of Department of Health in Limpopo Province.

OBJECTIVES: The specific objectives of the study were as follows:

1. To determine the most common occupational types of injuries and/or diseases amongst healthcare workers with regard to the demographic profile (i.e. age, gender, occupation, workstation) of healthcare workers;
2. To establish outcomes of these injuries and diseases fatalities regard to the demographic profile (i.e. age, gender, occupation, workstation) of healthcare workers; and
3. To assess the association between the predominant injuries and diseases with the profile of the health care workers

METHOD: The researcher sourced data electronically from Department of Health as quarterly reports, four (4) for each year of the financial years 2007/2008, 2008/2009 and 2009/2010 respectively. The data was consolidated into financial years, cleaned out part of 2007 and 2010 so at to remain with 3 calendar years (2007, 2008 &2009) prior analysis.

RESULTS: There were 725 per 100 000 healthcare workers affected by injuries and diseases during the study period. These injuries/and diseases affected more males than females above 40 years with the mean age being 43 years. Of the 631 injuries and diseases reported, 89% were injuries whist 11 % were diseases with most employees from Mopani district. The most common injuries which affected HCWs

thus included needle stick injuries (24%), slip/trip/fall (23%), motor vehicle accidents (14%), injuries by external objects (10%) and assaults (7%). The most common diseases which affected HCWs were found to be TB (69%), diseases by chemical agents (12%), cholera (9%) and poisoning (2%). The needle stick injury affected clinical nurses (59%) more than other professionals; moreover, TB affected 63.6% of nurses. The captured outcome of this injury/disease was 4 fatalities among EMS personnel.

CONCLUSION: In conclusion, this study demonstrates that tuberculosis is the most common occupational disease acquired whilst needle stick injury is the commonest occupational injury sustained by healthcare workers of the Department of Health, Limpopo Province. The employees were therefore affected by preventable occupational injuries and diseases.

RECOMMENDATIONS: Preventative programs need to be strengthened to reduce morbidity of tuberculosis and needle stick injuries amongst employees.

CHAPTER 1

INTRODUCTION

1.1 Introduction

The South African health care system intends to influence the health outcomes of South Africans significantly by the year 2015 through the attainment of the Millennium Development Goals (MDGs) 4, 5 & 6.These are known as health MDGs, 4 aims to reduce child mortality rate, 5 to improve maternal health and 6 aims to combat HIV/AIDS, malaria and other diseases (WHO, 2000).

It has been revealed in the background paper prepared for the World Health Report 2006 though that there is global acknowledgement that attaining these MDGs depends largely on the availability of healthcare workers (Tawfik & Kinoti, 2006).

The Health Minister, Dr Aaron Motswaledi in his budget speech identified barriers to improve health outcomes, which includes among other the lack of access and integration of healthcare services, degraded healthcare facilities & infrastructure, poor management & healthcare financing and human resource shortages (DOH, 2011).

The Health Minister also indicated that findings from Lancet medical journal have revealed that SA is going through a quadruple burden of disease: HIV/AIDS & TB, Maternal & Child mortality, Non-communicable diseases, lastly Violence & Injury, which threatens the country's health outcomes, hence attainment of MDGs. The country cannot therefore afford human resource shortages with this quadruple burden of disease.

As much as healthcare workers are there to ensure that health-related MDGs are attained and the burden of diseases is reduced, they are also part of the population which is affected by these pandemics. Occupational health programmes for healthcare workers must therefore strengthen HIV/AIDS & TB services to address MDG 6 in the workplace whilst MDG 4 & 5 can be addressed by the implementation of Childcare Facilities Guidelines as premeditated by the Department of Public

Service Administration (DPSA) for the children of healthcare workers coming back from maternity leave (DPSA, 2009).

It is a sad reality that healthcare workers also have a high prevalence of obesity-related non-communicable diseases which often result from unhealthy diet, obesity, physical inactivity and tobacco use (Skaal, 2011).

They are therefore because of leading unhealthy lifestyles no longer regarded as role models by their patients and community hence it is not unusual these days to see healthcare workers being subjected to violence at work being either by their social encounters, the community they serve or even colleagues.

Apart from HCWs being vulnerable as part of the population faced with quadruple burden of diseases, they are also exposed to injuries whilst conducting their duties regardless of the fact that all injuries at the workplace are preventable.

Figure 1: Map of Limpopo Province

Limpopo Province is one of the nine provinces in South Africa with an estimated population of 5.55 m of which 54.6% is women and 45.4% is men (Stats SA, 2008). The province is the 4th largest in the country and shares its international borders with Mozambique, Zimbabwe and Botswana hence a gateway to the African continent. It is located in the north eastern part of South Africa, largely rural and considered one of the poorest provinces in the country (NDA, 2011).

It consists of five (5) district municipalities, namely; Vhembe, Mopani, Capricorn, Sekhukhune, and Waterberg, as illustrated in the **Figure 1** above and twenty five (25) local municipalities. The National Government has declared Mopani district as the nodal point of severe poverty which require urgent attention in terms of development and additional resource allocation.

The province has four hundred and ninety six (496) healthcare facilities, consisting of two (2) tertiary hospitals based in the Capricorn district; five (5) regional hospitals based in each district with two in Sekhukhune and none in Capricorn district. It also has thirty three (33) district hospitals, and four hundred and fifty six (456) primary health care facilities (DHSD, 2010)

1.2 Background

Healthcare workers (HCWs) are defined to be “all people primarily engaged in actions with the primary intent of enhancing health” (World Health Report, 2006). These healthcare workers comprise of clinical, allied, technical and support employees who are all crucial in the provision and sustenance of the health system of any country. The clinical staff include; nurses, doctors, pathologists and dentists, while technicians include; laboratory and radiology personnel. The allied staff on the other hand include; physiotherapists, occupational therapists, social workers, dieticians, emergency medical services personnel (EMS) and pharmacists whereas support staff include; drivers, cleaners, gardeners and maintenance workers.

Foley (2004) indicates that healthcare workers are in occupations with the highest rates of occupational injuries and illness. These injuries and/or diseases result from exposure to hazards these HCWs are subjected to in their working environment. The hazards that HCWs are exposed to, comprise of; biological, chemical, physical, psychosocial, mechanical and ergonomic hazards which predispose them to infectious diseases, injuries and job stress. This normally occurs as a result of the fact that often, the healthcare workers seldom address the hazards present in their working environments (Kielkowski *et.al,* 2008) because of the “*super-being*” versus “*Patient first*” syndromes.

Conditions prevailing at work and in the work environment for many occupations in many countries still involve distinct and even severe hazards to health that often reduces the well-being, working capacity and even the life span of working individuals (WHR, 1995). When the well-being of HCW’s is compromised, it thus leads to absenteeism as a result of illness and/or injury, which in turn contributes to poor patient care, and ultimately resulting in poor health outcomes. These occupational diseases and injuries are also a major contributor to the total cost of health care and lost productivity (Leigh JP *et al*., 2001).

According to the Occupational Health and Safety Act 85 of 1993, section 8 (1) it is the responsibility of the employer to bring about and maintain, as far as reasonably practicable, a work environment that is safe and without risk to the health of the

workers (OHSA, 1993). If the worker during the course of duty gets injured and/or acquire disease which entails medical expenses and/or absence from work for more than three (3) days, then that injury and/or disease must be reported to the Compensation Commissioner (CC) as required by Compensation of Occupational Injuries and Diseases Act 130 of 1993 (COIDA, 1993).

1.3 Problem Statement

Although the injuries are reported, there is no analysis conducted in order to look at trends, and the extent of injuries so that informed decisions can be taken to address the problem; hence there was a need for this study.

Previously, the range and extent of injuries and occupational diseases affecting health care workers in Limpopo Province was not well established; this report therefore serve as a baseline to clarify as to who amongst healthcare workers was mostly affected and how many healthcare workers lost their lives due to injuries and/or diseases in Limpopo Province during the 3-year study period.

The analysis of occupational injuries and/or diseases amongst healthcare workers was therefore not only to indicate the demographics but should also ideally be crucial in designing the preventative interventions relevant to the vulnerability of specific groups of healthcare workers.

1.4 Rationale Of The Study

The researcher was motivated by lack of analysed occupational injuries and diseases data which tends to hinder proper planning of proactive interventions and strategies for managing occupational injuries and diseases, resource allocation and training.

1.5 Research Question

The study aimed at answering the following research questions:

1. Which occupational injuries and/or diseases are commonly sustained and/or acquired by healthcare workers of the Department of Health in Limpopo Province?
2. Which factors are associated with the types of occupational injuries/diseases among healthcare workers?

1.6 Aim of the Study

The purpose of the study was to analyse and provide data on the incidence of occupational injuries and the prevalence of occupational diseases amongst healthcare workers of Department of Health in Limpopo Province.

1.7 Specific Objectives of the Study

The specific objectives of the study were as follows:

1. To determine the most common occupational types of injuries and/or diseases amongst healthcare workers with regard to the demographic profile (i.e. age, gender, occupation, workstation) of healthcare workers;

2. To establish outcomes of these injuries and diseases fatalities regard to the demographic profile (i.e. age, gender, occupation, workstation) of healthcare workers; and

3. To assess the association between the predominant injuries and diseases with the profile of the health care workers

1.8 The Significance of the Study

The study results may benefit the Department of Health in informing decision-makers, policy and planning of preventative interventions and strategies for managing occupational injuries and/or diseases, as well as in identifying gaps in resource allocation and training for reducing occupational injuries and/or diseases in the Limpopo Province.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter reviews the extent of occupational injuries and diseases amongst workers in general, exposures and types of hazards specifically amongst healthcare workers and previous studies on occupational injuries and diseases in healthcare workers.

2.2 Extent Of Occupational Injuries and Diseases

The World Health Organization (WHO) has estimated that 271 million people suffer from occupational injuries whereas 2 million die as a consequence of these injuries (WHR, 2003). The Bureau of Labor Statistics (BLS) reports that the incidence rate of injuries and illnesses among hospital workers was highest in United States (US) government at 11.9 cases per 100 full-time workers (BLS, 2008). Australian Bureau of Statistics reports that 690,000 (6, 4%) of all workers experienced at least one work-related injury or illness (ABS, 2007) over 12 months whereas in South Africa 4, 5% of all workers were reported over 60 months (CFSR, 1999).

According to the Compensation Fund Statistics Report (CFSR): Department of Labour, out of 4 919 347 South African (SA) workers 223 614 sustained injuries and 889 fatalities from 1999 to 2003 due to workplace injuries. Workers from the Government Departments sustained 13 103 injuries where 160 were permanently disabled and 92 died. Of the 223 614 SA workers, Limpopo Province workers sustained 32 173 injuries with 47 fatal cases (CFSR, 1999).

Although it is possible to prevent or reduce health care worker exposure to the hazards that cause injuries and/or diseases, National Institute for Occupational Safety and Health reports that the health care workers are actually experiencing increasing numbers of occupational injuries and illnesses (Foley, 2004). The rates of occupational injury to healthcare workers have risen over the past decade and by

contrast, two of the most hazardous industries, agriculture and construction, are safer today as compared to healthcare industry than they were a decade ago (Foley, 2004).

2.3 Exposures and Types of Hazards

The exposure to hazards vary according to the type of work that is performed in a particular industry (for instance in construction, agriculture or health) and this therefore indicates that workplaces regardless of the nature of work processes pose certain degree of risks/hazards to its employees. Health care environments also expose HCWs to a wide range of hazards, placing them in high risk situations. The hazardous exposures are classified as biologic and infectious, chemical, environmental and mechanical, physical, psychosocial hazards (Rogers, 1997) and ergonomic hazards which put them at risk of illness and/or injury (Foley, 2004; Ramsay *et.al,* 2005; WHR, 2006; Kielkowski *et.al.* 2008):

- Biologic and infectious hazards: Bacteria, viruses, fungi, parasites transmitted through contact with infected patients or contaminated body secretions or fluids. It can either be airborne (MDR TB, MRSA, SARS) or blood borne (HIV, HCV, HBV, and VHF).Globally, occupational injuries result in 40% of hepatitis B & C infections and 2.5% of HIV infections amongst healthcare workers.HIV prevalence amongst healthcare workers in SA is 15.7% (Shisana *et al,* 2004)

  More than 90% of the world's TB cases are found in hospitals in developing countries and 54% of healthcare workers in these countries are estimated to carry latent TB (Rebman, *et.al*, 2008). SA is ranked the 3rd out of 22 countries in the world with high TB prevalence of 808 per 100 000 population (WHO, 2011)

- Chemical hazards: Exposure to disinfectants and sterilizing agents which aims to maintain a proper environment, chemotherapeutic agents used for treatments of patients, latex exposure mainly from gloves which prevents exposure to body fluids and anaesthetic gases administered to enhance surgical intervention to patients. Latex allergy is a growing problem among

healthcare workers with prevalence rates of 10% and reactions can range from local contact dermatitis to systemic reactions and anaphylaxis (Rogers, 1997).

- Environmental and mechanical hazards: Poor equipment or lifting devices, steps, ramps, slippery floors which usually lead to slips, trips and falls (STPs). Ramsay*, et.al* (2006) found that 38% of all nurses are affected by back injuries due to lifting and moving of patients.

- Physical hazards: Radiation, electricity, extreme temperatures, noise, laser, vibration, assault causing tissue trauma.

- Psychosocial hazards: Unmanaged stresses, interpersonal relations, verbal abuse, threats, working alone, management maladministration, working long hours, shift work, overwork. Several studies indicates that absenteeism, high staff turnover, poor quality control of work, poor work relations and emotional exhaustion occur as a result of these psychosocial hazards (Rogers, 1997).

- Ergonomics: Walking/standing/sitting for long periods of time, lifting, overexertion are examples of situations which demand force, repetition, awkward postures and prolonged activities. Sprains and strains are the commonest injuries amongst healthcare workers which result in prolonged absence from work (Alamgir *et.al*, 2007).

2.4 Previous studies on occupational injuries and diseases in healthcare workers.

In Tanzania, Manyele *et al* (2008) conducted a study with the aim to determine occupational injuries and disease among healthcare workers. According to Manyele *et.al*, the most common types of occupational injuries and illnesses amongst healthcare workers caused or aggravated directly or indirectly by work in Tanzania include needle stick injuries (NSIs), splash of blood from patients, burn injury from chemicals, falls from slippery floors and assault by patients. This study revealed needle stick injuries as the commonest injuries (52.9%) reported by healthcare workers (Manyele *et. al,* 2008).

Salelkar and colleagues in their study carried out in India indicated that 34.8% of healthcare workers had experienced needle stick injuries during the study period (Salelkar *et al*, 2010) whilst the Department of Paediatrics at the University of Medical Science at Tehran, Iran reported 49% needle stick injuries occurred among health care workers (Shiva *et al*, 2011).

In USA, Bell *et al* (2008) in their study found that slip/trip/fall (25%) were the second most common cause of injuries in the hospitals. According to the BLS (2009), the incidence rate of injuries from slips, trips, and falls (STFs) was 38.2 per 10,000 employees in the health facility.

In Rome, a study conducted in the psychiatric ward demonstrated that nurses are mainly the victims of verbal aggressive behaviour by patients, while doctors were assaulted physically (Salerno *et al*, 2009).The SA country study indicates that 61, 9% of HCWs experience at least one incident of physical and psychological violence in their workplaces (Steinman, 2003).

The injuries and/or diseases can further be explained in relation to other potential risk factors such as age, gender, occupation and the area of work. Demographic characteristics of the workers such as age, gender, occupation and work area can potentially enhance appropriate planning, prevention, training and resource allocation.

From the SA 1999 CFSR analysis, young workers between 16–20 years of age sustained fewer injuries at 0.22% as compared to older workers aged 40–49 years who had the highest percentage of injuries at 25.23%. On the contrary, other studies indicate that younger workers sustain occupational injuries at higher rates than older workers due to lack of experience, lack of knowledge and underdeveloped skills (Tadese & Kumie, 2007; ABS, 2007).

However, several studies have demonstrated that the age distribution of healthcare workers affected by occupational injuries/diseases differs. A study in India indicated that TB amongst healthcare workers affected those aged 18–24 years the most (Gopinath *et al,* 2004) whilst in Kwazulu-Natal it affected those aged 25–29 years, South Africa (Naidoo *et al*, 2006) and needle stick injuries in Brazil affected those aged 35–39 years (do Prado, *et al,* 2008). The relationship of work-related injury

and age might therefore be confounded by experience, healthy worker effect or the fact that older workers hold safer positions (Alamgir *et.al*, 2007).

Men were found to have sustained more injuries 188 748 as compared to 34 866 women in 1999 in SA (CFSR, 1999). Reports from Australia, France, U.S and China revealed that men have the highest rates of occupational injuries than women (Tadese & Kumie, 2007; ABS, 2007). However studies conducted in eleven urban industries and textile factory in Addis Ababa reported that gender has no association with the prevalence of occupational injuries (Tadese & Kumie, 2007).

A study carried out in a tertiary hospital by the Department of Microbiology at Christian Medical College in India indicated that 45% of nurses who participated in the study were affected by tuberculosis (Gopinath *et al,* 2004). Similar findings were reported in Brazil which indicated tuberculosis incidence of 44% among nurses (do Prado, et al, 2008). A meta-analysis by Joshi *et al*, reported prevalence of LTBI among nurses of 43 - 87% and the rate was high in nurses than in other healthcare workers (Joshi *et al,* 2006).

A retrospective record review conducted in public sector hospitals in Kwazulu-Natal reported high incidence of TB among paramedical staff (Naidoo *et al*, 2006). Eshun-Wilson *et al* (2008) in their study carried out in Tygerberg Academic Hospital reported high incidence (40%) of TB among nurses.

In summary, the reviewed studies demonstrated that categories of healthcare workers with higher incidence of TB were nurses (Gopinath *et al*, 200; do Prado, et al, 2008; Joshi *et al*, 2006; Eshun-Wilson *et al*, 2008), while one study reported high incidence of TB among paramedics staff (Naidoo *et al*, 2006) and cleaners (Alamgir & Yu, 2008).

Analyses of these injuries reveal the underlying causes of accidents amongst employees, which is crucial in accident prevention. A study at a tertiary hospital in India aimed at determining circumstances under which NSI occurred indicated that the commonest clinical activities causing needle stick injuries were blood withdrawal, suturing and vaccination (Muralidhar *et al,* 2010). An epidemiological study in Germany illustrated that most of the needle stick injuries among healthcare workers occur during disposal of used syringes (Hofmann *et al,* 2002).

Though prevalence of musculoskeletal injury is high among healthcare workers, it is higher amongst those who regularly lift patients than those who occasionally do. Therefore, different tasks between occupations may explain injury differences between occupations (Alamgir *et.al,* 2007). Alamgir & Yu, 2008 concluded in a study of epidemiology of occupational injury among cleaners that cleaners were found to be at an elevated risk of all injury categories compared with healthcare workers in general.

Healthcare costs of occupational accidents are similar to the economic direct expenditures to compensate death and disability in the social security system in Mexico (Carlos-Rivera *et.al*, 2008). In California, occupational injuries and illnesses are a major contributor to the total cost of healthcare and lost productivity. It is thus evident that workers are exposed to a variety of hazards which causes injuries and/or diseases that affect workers depending on the type of work performed the area from where it is performed, the age and gender of employees.

These injuries also cost the employer in terms of man-days of work lost, medical expenses, compensation awards and deplete human resource through deaths. There is international recognition that healthcare workforce attrition caused by occupational hazards is high (Rebman, *et.al,* 2008). In Africa and Asia, the growing threat of illness or death related to occupationally acquired disease is increasingly a reason healthcare workers leave their jobs (WHR, 2006).

2.5 Concluding remarks

Occupational injuries and diseases are prevalent in various health care settings as shown in the studies reviewed above. However, no study was found about injuries and diseases in the Limpopo province amongst healthcare workers.

CHAPTER 3

METHODOLOGY

3.1 Introduction

In this chapter, the study design, setting, population and sample size, inclusion criteria and sampling, data collection, reliability and validity of the data collection instrument, data analysis and ethical considerations are presented.

3.2 Study Design

This was a retrospective study based on the review of records about occupational injuries and/or diseases reported to the Department of Health over a period of 3 years from January 1, 2007 to December 31, 2009.

3.3 Study Setting

The data was about health care workers from the Department of Health Limpopo Province. The Limpopo Province has five (5) districts, namely Capricorn, Vhembe, Waterberg, Sekhukhune and Mopani. The province has four hundred and ninety six (496) healthcare facilities, consisting of two (2) tertiary hospitals; five (5) regional hospitals, thirty three (33) district hospitals, and four hundred and fifty six (456) primary health care clinics.

3.4 Study Population and Sample Size

The study population included public health care workers in the province; but the target population is made of only those who have been victims of occupational injuries and/or diseases as reported to the provincial office.

3.5 Sampling and Inclusion Criteria

No sampling technique was used; all available records of injuries and/or diseases reported to the Department of Health in Limpopo during the three years period of the study were included in the study.

3.6 Data Collection and Analysis

The data for the study was initially extracted from the compensation reports, known as WCI 1 and WCI 2 by the human resource COID officer who is responsible for reporting injuries/diseases sustained/acquired in the Department of Health to the Department of Labour. The data captured on the reports included age, workstation, names, persal number, type of injury/disease, gender, occupation of the victims, and the outcomes of the injuries/diseases.

The researcher sourced data electronically from Department of Health as quarterly reports [four (4) each] for the financial years 2007/2008, 2008/2009 and 2009/2010 respectively. These data was subsequently aggregated into financial years, cleaned out and excess data truncated so that only that falling within three (3) calendar years (2007, 2008 & 2009) was considered for analysis.

3.7 Reliability and Validity of the Study Instrument

As with most retrospective study, missing records can lead to selection bias. The data for the study was extracted from the Limpopo Department of Health Provincial COID Office computer database. The reliability and validity of the database was manually checked by viewing missing (i.e. age, gender, occupations) and out of range values, consistency of data and duplicates. Data clean-up was made where 631 records were retrieved and 17 were discarded for incomplete data

3.8 Data Analysis

The data for the study was entered and analysed using Microsoft Excel and n STATA 10, respectively. Categorical data was interpreted using frequencies and percentages. Chi-square test was used to assess the rates between the injuries/diseases by year. P-value of less than 0.05 was considered statistical significant.

3.9 Study Limitations

- The sample constitutes HCWs who reported injuries and illnesses during the 3-year study period even though some of these incidents occurred prior 2007.
- The data in some of the records was missing and could not be accessed as the information was archived. In total 631 records were retrieved, while 17 were discarded for incomplete data.

3.10 Ethical Considerations

Ethical approval of this study was obtained from University of Limpopo (Medunsa Campus) Research and Ethics Committee: MREC/H/10/2011:PG. The permission to use the Occupational Injuries and Disease database was obtained from the Limpopo Department of Health Provincial Research Committee: Ref 4/2/2.

The names of the employees and/or persal number were not used in analysis to ensure confidentiality and anonymity.

CHAPTER 4

RESULT OF THE STUDY

4.1 Introduction

In the previous chapter, the materials and methods used in this study were described. In this chapter the results and interpretation of the findings are presented. It starts by reporting on the rates of injuries and diseases and goes on to describe the demographic profile of healthcare workers; and its end by presenting data on the medical costs of injuries and diseases as claimed from the Compensation Commissioner.

4.2 Rates of Injuries and/or Diseases per Financial Year

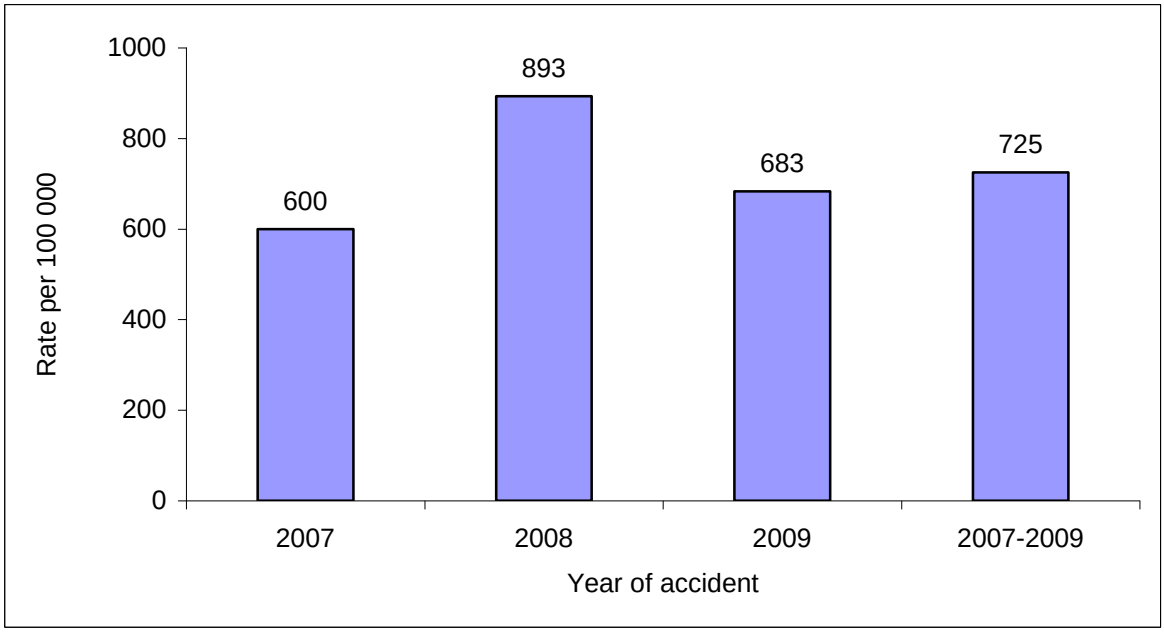

Figure 2: Rate of Occupational Injuries/Diseases

During the 3-year period of the study, 725 per 100 000 (631/87080) healthcare workers reported occupational injuries and/or diseases (**Figure 2**). The findings of this study revealed a significant increase in the number of injuries and/or diseases in 2008 as compared to 2007 and 2009 ($p<0.01$).

4.3 Demographic Characteristics

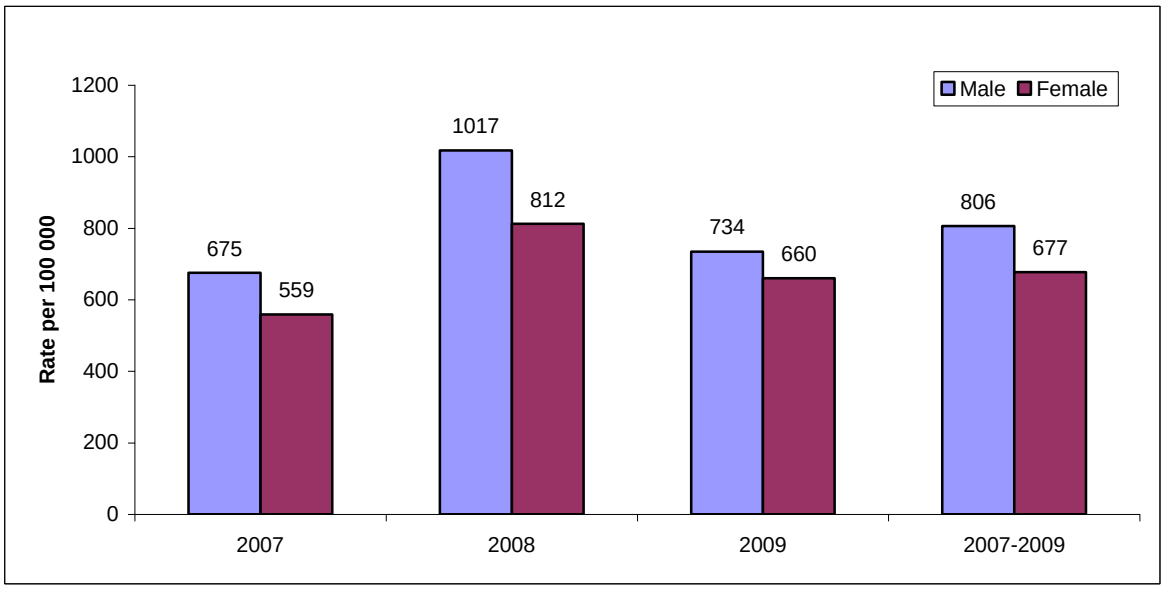

Figure 3: Gender Distribution

Figure 3 illustrates the distribution of gender in the study which excludes six employees with unspecified gender. About 405 (806 per 100 000) of the employees who were affected by occupational injuries and/or diseases were male and only 220 (677 per 100 000) were female

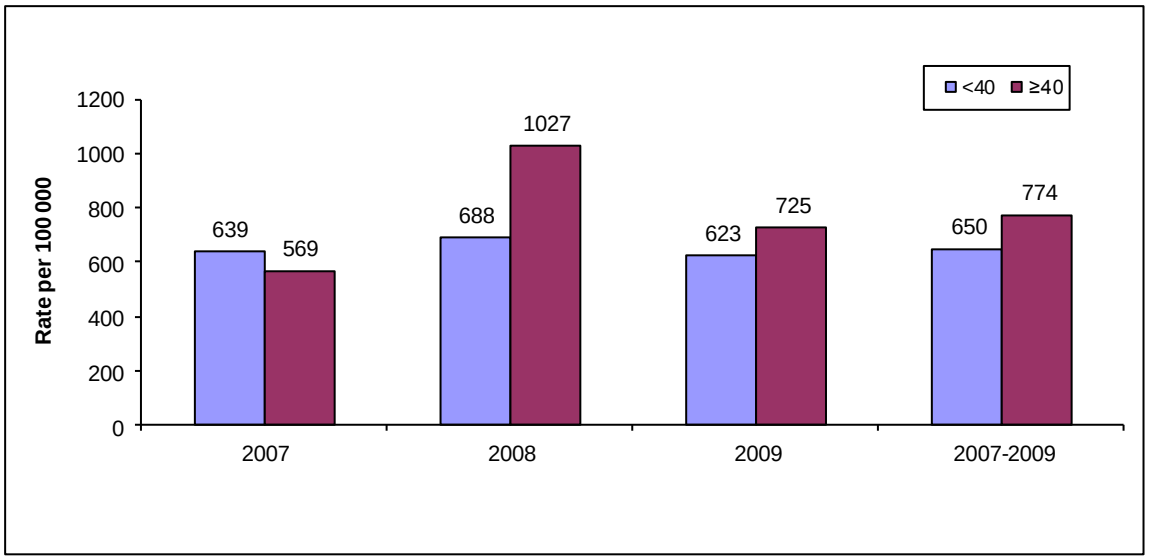

Figure 4: Age Distribution

Figure 4 shows age distribution of the records reviewed with the exclusion of two employees whose ages were unspecified. The majority 392 (774 per 100 000) of

employees who were affected by injuries and/or diseases were in the age group 40 years and older. About 237 (650 per 100 000) of employees were less than 40 years. The age of the employees was ranging from 20 to 65 years with the mean age of 43 ±11.2

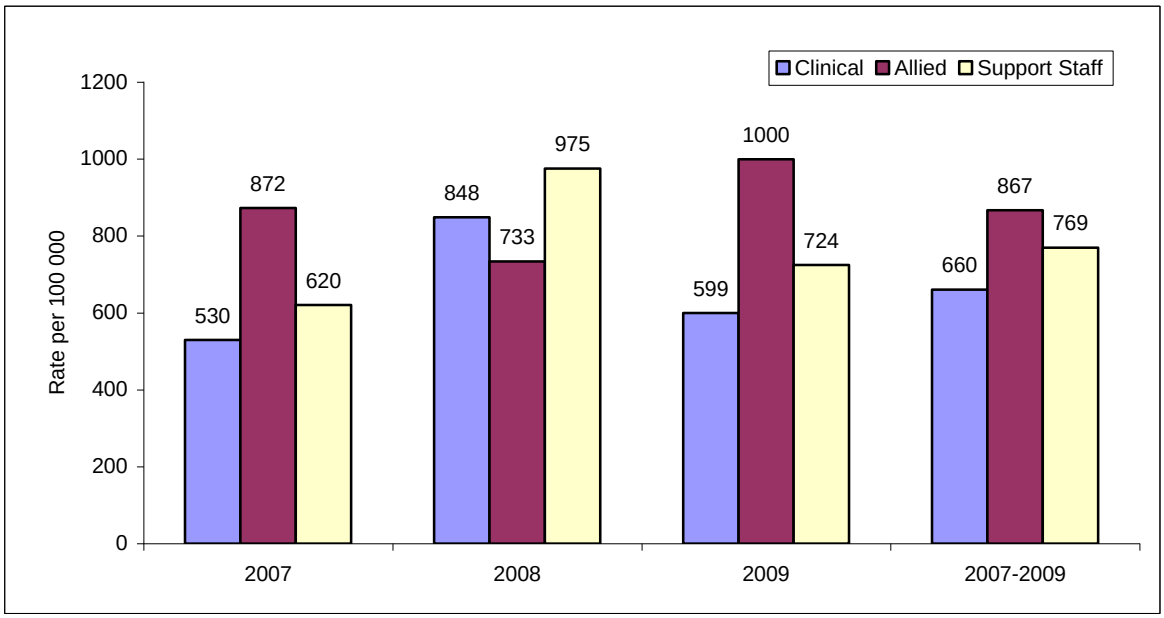

Figure 5: Distribution of Job Category

Figure 5 illustrates the job categories of clinical, allied and support staff with the exclusion of three employees whose occupations were not stated from the records reviewed.

A large proportion (867 per 100 000) of healthcare workers who sustained/acquired injuries and/or diseases were allied staff, followed by (769 per 100 000) support staff. The rate of occupational injuries and/or diseases was 660 per 100 000) amongst clinical staff of which 89% were nurses, and only 11% were medical doctors. Amongst the support staff, 31% were cleaners, 22% maintenance, 14% administrative staff, 12% laundry service and 8% kitchen staff. Porter, mortuary and transport contributed 12% of occupational injuries and/or diseases.

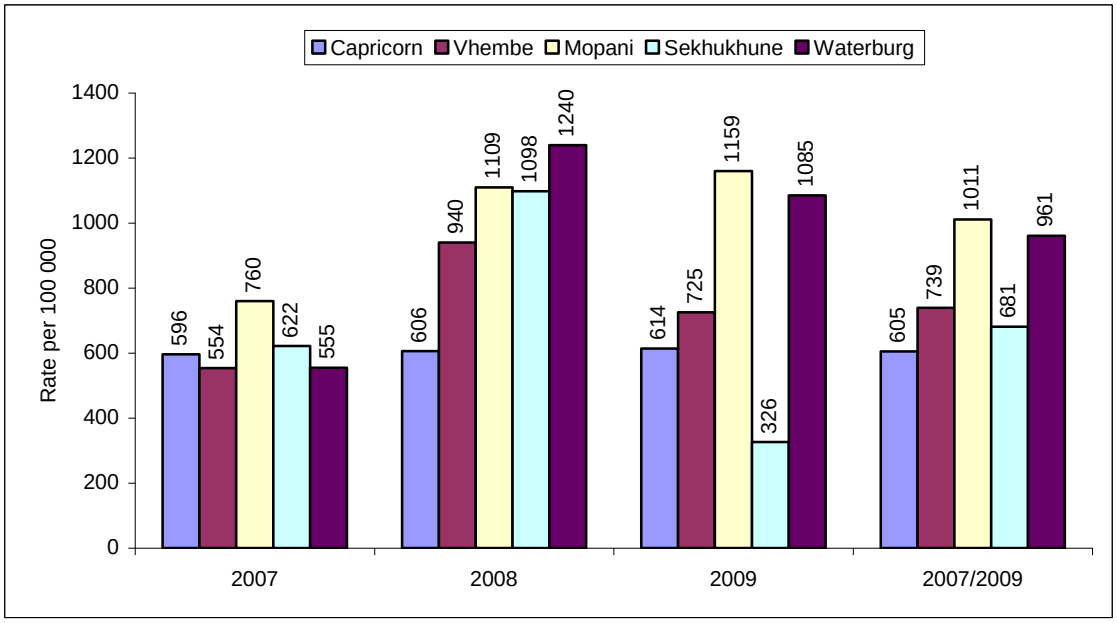

Figure 6: Distribution of Injuries/Diseases Reported per District

Figure 6 above presents the distribution of occupational injuries and/or diseases per district per year. As noted above, during the three year period of the study, occupational injuries and/or diseases affected more employees in Mopani (1011 per 100 000), followed by Waterberg District (961 per 100 000), Vhembe (739 per 100 000), Sekhukhune (681 per 100 000) and the least affected were in the Capricorn District (605 per 100 000)

4.4 Distribution of Occupational injuries and Diseases

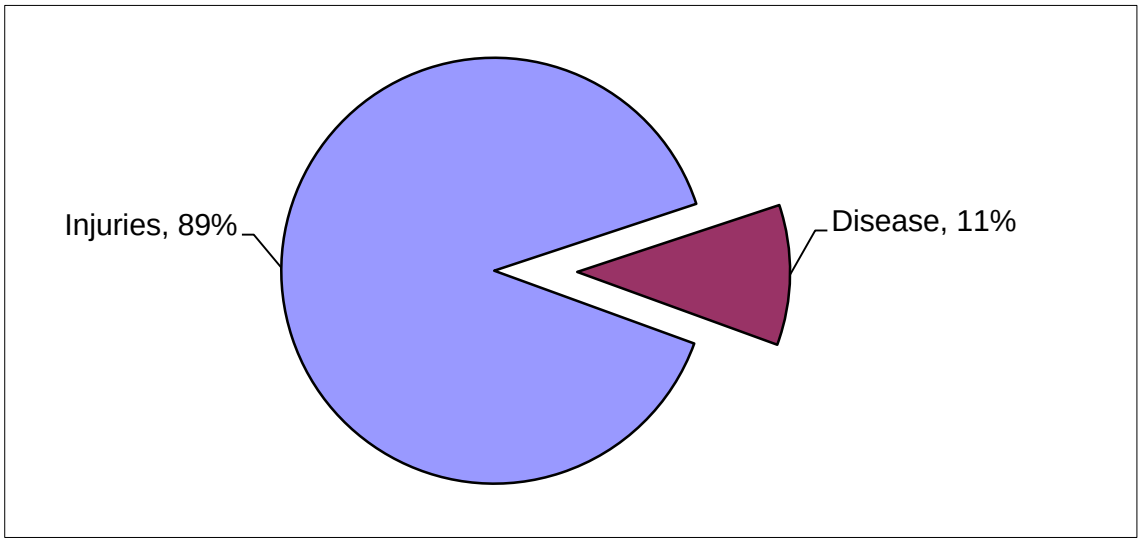

Figure 7: Distribution of Injuries and Diseases

Comprising the six hundred and thirty one (631) injuries/disease reported, 567(89%) were occupational injuries, while the remaining 64 (11%) were diseases (**Figure 7**).

Table 1: Distribution of occupational conditions

Diseases	**No**	**%**
Tuberculosis	44	69
Cholera	6	9
Chicken pox	2	2
Disease-chemical agent	8	12
Poisoning	1	2
Skin disease	1	2
Musculoskeletal disorder	1	2
Cardiovascular disorder	1	2
Total	64	100

Table 1 shows the proportion of diseases which affected healthcare workers during the 3-year study period. Sixty four (64) cases were reported and amongst these, tuberculosis was most predominant contributing 44 (69%), followed by 8 (12%) of diseases caused by chemical agents then cholera and chicken pox with 8 (11%) of reported diseases. Poisoning and other diseases only attributed to 8% of occupational disorders reported.

Table 2: Distribution of Injuries

	No	**%**
Needle Prick	137	24
Slip/trip/fall	133	23
Motor vehicle accidents	81	14
External object impact	59	10
Assaults (by patient/colleague)	42	7
Cuts	27	5
Spill/Splash/contact chemical agents	18	3
Lifting/carrying	15	3
Non-specified	13	2
Spill/Splash/contact body fluids	12	2
Others	10	2
Burns	9	2
Trapping	7	1
Sport Injury	4	1
	567	100

The distributions of sources of occupational injuries are presented in **Table 2**. From a total of 567 occupational injuries, 137 (24%) were from needle pricks, and 133 (23%) from injuries related to slip/trip/fall, while 81 (14%) were from motor vehicle accidents. Other sources of occupational injuries reported in this study included 59 (10%) due to external object impact, 42 (7%) as a result of assaults by patient/co-worker, 27 (5%) due to cuts, 18 (3%) spill/splash by chemical agents, 15 (3%) from lifting/carrying objects and 2% from spill/slash by body fluids.

Table 3: Cases of Tuberculosis per Demographics per Year, n=44

	2007	2008	2009
Age			
<30	1(13)	1(4)	1(8)
30-39	4(50)	7(29)	4(33)
40-49	1(13)	10(42)	5(42)
50-59	2(25)	5(21)	2(17)
60+	-	1(4)	-
Gender			
Female	7(87)	13(54)	6(50)
Male	1(13)	11(46)	6(50)
District			
Capricorn	-	-	1(8)
Mopani	3(37)	13(54)	4(33)
Sekhukhune	2(25)	4(16)	-
Vhembe	1(12)	5(20)	3(25)
Waterberg	2(25)	2(8)	4(33)
Job category			
Nurse	7(87)	13(54)	8(67)
Doctor	-	1(4)	-
Admin	-	3(12)	-
Cleaner	1(13)	1(4)	2(17)
Kitchen staff	-	3(12)	-
Laundry staff	-	1(4)	-
Maintenance	-	-	1(8)
Porter	-	1(4)	1(8)
Transport	-	1(4)	-

Table 3 presents demographic profile of tuberculosis cases acquired per year. Of the forty four (44) TB cases reported, the higher number (36.5%) of employees were in the age group 40-49 years, followed by of those aged 30-39 years (34.1%) and (20.5%) in the age group 50-59 years. The majority (59.1%) of TB cases were female. More than 40% of TB cases were reported from Mopani district (45.4%),

20.5% from Vhembe district, 18.2% were from Waterberg, 13.6% Sekhukhune district, and 2.3% from Capricorn district. About 63.6% of TB cases reported were nurses followed by 9.1% cleaners.

Table 4: Cases of Needle Prick Injuries per Demographics per Year, n=137

		2007	2008	2009
Age				
	<30	13(27.6)	12(22.2)	12(33.3)
	30-39	13(27.6)	10(18.5)	10(27.8)
	40-49	12(25.5)	16(29.6)	8(22.2)
	50-59	7(14.9)	15(27.8)	6(16.7)
	60+	2(4.3)	1(1.9)	-
Gender				
	Female	37(79)	44(82)	27(75)
	Male	10(21)	10(18)	9(25)
District				
	Capricorn	14(29.8)	8(14.8)	8(22.2)
	Mopani	8(17.0)	11(20.4)	12(33.3)
	Sekhukhune	11(23.4)	11(20.4)	4(11.1)
	Vhembe	6(12.8)	14(25.9)	6(16.7)
	Waterberg	8(17.0)	10(18.5)	6(16.7)
Job category				
	Dental	-	-	1(3)
	EHP	-	1(1.7)	-
	EMS	2(4.3)	-	1(3)
	Nurse	28(60.9)	37(63.8)	17(51.5)
	Doctor	6(13)	8(13.8)	7(21.2)
	Admin staff	-	1(1.7)	-
	Cleaners	7(15.2)	5(8.6)	4(12.1)
	Laundry staff	-	3(5.2)	1(3)
	Mortuary staff	1(2.2)	-	-
	Maintenance staff	1(2.2)	2(3.4)	1(3)
	Porters	-	1(1.7)	1(3)
	Transport	1(2.2)	-	-

Table 4 shows the distribution of 137 needle prick injuries sustained during the study period. Twenty seven per cent (27%) of reported needle pricks were sustained by employees in the age group 20-29 years, followed by those aged 40-49 years (26.3%), 30-39 years (24.1%) and older employees aged 50 years and above (22.5%). More than 70% of needle pricks occurred among female. Fifty nine per cent (59%) of reported needle pricks were sustained by nurses followed by (15%) doctors and 11% cleaners.

Table 5: Cases of Slip/Trip/Fall per Demographics per Year, n=133

	2007	2008	2009
Age			
<30	2(7.1)	2(3.8)	2(3.9)
30-39	11(39.3)	10(18.9)	9(17.3)
40-49	9(32.1)	14(26.4)	18(34.6)
50-59	3(10.7)	18(33.9)	19(36.5)
60+	3(10.7)	8(15.1)	4(7.7)
Gender			
Female	17(60.7)	39(73.5)	38(75)
Male	9(39.3)	13(26.5)	13(25)
District			
Capricorn	10(35.7)	8(15.1)	16(30.8)
Mopani	8(28.6)	11(20.8)	12(23.1)
Sekhukhune	1(3.6)	10(18.9)	1(1.9)
Vhembe	7(25)	16(30.2)	17(32.7)
Waterberg	2(7.1)	8(15.1)	6(11.5)
Job category			
EMS	-	-	1(2)
OT	1(3.7)	-	-
Optometrist	-	-	1(2)
Pharmacist	1(3.7)	1(1.9)	1(2)
Nurse	8(29.6)	25(46.3)	24(49)
Doctor	-	1(1.9)	1(2)
Admin	6(22.2)	4(7.4)	4(8.2)
Cleaner	4(14.8)	9(16.7)	7(14)
Kitchen staff	-	2(3.7)	-
Laundry staff	4(14.8)	3(5.6)	4(8.2)
Maintenance	3(11.1)	6(11.1)	4(8.2)
Porters	-	3(5.6)	1(2)
Transport	-	-	1(2)

Of the 133 cases that slip, trip and/or fall, 31% were in the age group 40-49 years followed by 30% aged 50-59 years. More than 70% of injuries related to slip, trip and/or fall were reported among female. About 2.3% of employees with injuries related to slip, trip and/or fall, their gender were not stated. The majority (30.1%) of these injuries were from Vhembe district (25.6%); Capricorn (23.3%); Mopani (12%), and Waterberg (9%). In Sekhukhune district, 43.8% of Nurses suffer most from injuries related to slip, trip and/or fall, followed by cleaners (15.4%); administrators (10.8%), and maintenance (10%), see **Table 5**.

Table 6: Cases of Motor Vehicle Accident per Demographics per Year, n=81

	2007	2008	2009
Age			
<30	4(17.3)	6(21.4)	11(37.9)
30-39	7(39.4)	9(31.1)	10(34.5)
40-49	8(34.8)	10(35.7)	7(24.1)
50-59	3(13.0)	1(3.6)	-
60+	1(4.4)	2(7.1)	1(3.5)
Gender			
Female	7(30.4)	16(57.1)	15(51.7)
Male	16(69.6)	12(42.9)	14(48.3)
District			
Capricorn	13(52)	4(15)	5(17.2)
Mopani	3(12)	2(7)	2(6.9)
Sekhukhune	1(4)	8(30)	4(13.8)
Vhembe	5(20)	4(15)	7(24.1)
Waterberg	3(12)	9(33)	11(37.9)
Job category			
EMS	8(32)	6(22)	9(31)
Dental	-	1(4)	-
OT	1(4)	-	1(3)
Dietician	-	-	1(3)
Optom	-	-	2(7)
Physio	1(4)	-	1(3)
Pharmacist	-	2(7)	-
EHP	-	-	1(3)
Nurse	7(28)	8(30)	5(17)
Doctor	-	2(7)	-
Admin	3(12)	1(4)	3(10)
Cleaner	1(4)	2(7)	-
Kitchen staff	-	-	-
Laundry staff	-	-	1(3)
Maintenance	-	1(4)	1(3)
Porters	-	1(4)	-
Transport	3(12)	3(11)	4(14)
Mortuary	1(4)	-	-

Table 6 shows the occupational injuries due to motor vehicle accidents. The higher proportion of motor vehicle accidents was seen in healthcare workers aged 30-39 years (32.5%), followed by employees aged 40-49 years (31.3%) and those less than 30 years (26.3%). More than 50% of healthcare workers with injuries due to motor vehicle accidents were male. Waterberg district (28.4%) and Capricorn district (27.2%) were the districts with higher number of injuries related to motor vehicle accidents, followed by Vhembe (19.8%) and Sekhukhune (16%).

Eight per cent of the motor vehicle accidents injuries were reported in Mopani district. The highest number of motor vehicle accidents was observed in allied health care workers, especially those working in the emergency service 28.4% and nurses (24.7%) rendering mobile services.

Table 7: Cases of Assaults per Demographics per Year, n=42

	2007	2008	2009
Age			
<30	-	1(6)	1(6)
30-39	4(44)	2(13)	2(13)
40-49	3(33)	8(50)	9(56)
50-59	1(11)	4(25)	3(19)
60+	1(11)	1(6)	1(6)
Gender			
Female	4(44)	9(53)	10(63)
Male	5(56)	8(47)	6(38)
District			
Capricorn	2(22)	6(35)	3(19)
Mopani	3(33)	2(12)	12(75)
Sekhukhune	-	1(6)	-
Vhembe	3(33)	5(29)	1(6)
Waterberg	1(11)	3(18)	-
Job category			
Pharmacist	-	-	1(7)
Nurse	6(67)	15(94)	10(67
Doctor	-	-	-
Admin	1(11)	1(6)	-
Cleaner	1(11)	-	2(13)
Laundry staff	-	-	1(7)
Maintenance	1(11)	-	1(7)

The occupational injuries due to assaults by patient and/or co-worker are presented in Table 7 above. Assaults by patient and/or co-worker were most common among healthcare workers aged 40-49 years (49%), followed by those 50 years and older (27%) and those less than 40 years (25%). The findings of this study indicated that 55% of females were assaulted. Mopani district (40.5%) was the district with the highest number of assaults by patient/co-workers, followed by Capricorn district (26.2%); Vhembe district (21.4%) and Waterberg district (9.5%). About 2.4% of occupational injuries due to assaults were reported in Sekhukhune district. Nurses sustained the most assaults (78%), followed by cleaners (8%).

4.5 Compensation Costs as Claimed

Table 8: Total Medical Costs of Injuries/Disease per Year.

	2007	2008	2009	Totals
Doctors	R 154,814.11	R 317,124.25	R 232,217.40	R 704,155.76
Laboratories	R 8,195.13	R 7,873.38	R 2,625.60	R 18,694.11
Medical Aids	R 25,411.00	-	-	R 25,411.00
Private Emergency Services	R 8,962.90	-	R 4,786.56	R 13,749.46
Travelling Expenses	R 849.78	R 25,564.00	R 71,618.46	R 98,032.24
Hospitals/Clinics	R 192,248.28	R 390,715.29	R 338,951.79	R 921,915.36
Funeral Costs	R 57,300.00	-	-	R 57,300.00
Attorneys	R 5,115.25	-	R 805.46	R 5,920.71
Provincial Treasury	-	R 63,966.57	-	R 63,966.57
Compensation Commissioner	-	R 87,136.74	R 240,500.96	R 327,637.70
Grand Total	**R 452,896.45**	**R 892,380.23**	**R 891,506.23**	**R 2,236,782.91**

Table 8 shows the medical costs of injuries/disease per year. The overall medical costs of injuries/disease during the three years period of the study was R 2 236 782.91. The cost of payments was lowest in 2007 at R 452 896.45, and highest in 2008 at R 892 380 23 during, while in 2009 the cost was R 891 506 23.

CHAPTER 5

DISCUSSION OF FINDINGS AND CONCLUSION

5.1 Introduction

In this chapter the results and interpretation of the findings are discussed in accordance with the objectives of the study.

5.2 Rate and Distribution of Occupational Injuries and Diseases

The findings of this study illustrate that over the 3-year period (2007-2009), the rate of occupational injuries/diseases among health care workers was 725 per 100 000 employees and increase by 14% from 600/100 000 employees in 2007 to 683/100 000 employees in 2009.

In Australia the rate of work-related injuries was 6400 per 100 000 employees in 2007 (ABS, 2007), while in the United States of America, the rate was 11900 per 100 000 employees (BLS, 2008).

In South Africa, the accident statistics for the year 1999-2003, showed that the rate of occupational injuries was 4546 per 100 000 employees and was high in KwaZulu-Natal, Limpopo and Eastern Cape (CFSR, 1999).

The findings of this study serve as baseline information for the Department of Health in Limpopo Province hence the rate cannot be compared. Foley (2004) was able to compare healthcare injuries of the past ten years and even went further to compare with injuries of other industries; in this case agriculture and construction.

5.3 Demographics of Occupational Injuries and Diseases

The rate of occupational injuries/disease in this study was high amongst males than females, despite the fact that the country, the province (Stats SA, 2008) and the Department of Health constitute more female population than males (Unpublished

DoH, 2010). Similar findings from Australia, France, U.S and China revealed that men have the highest rates of occupational injuries than women (ABS, 2007; Tadese & Kumie, 2007).

In this study, the findings indicated that, young inexperienced and mostly clinical employees between 20-29 years sustained more needle prick injuries. This concurs with the study by Tadese & Kumie (2007) and ABS (2007) which indicates that occupational injuries among young workers are more common due to lack of experience, lack of knowledge and underdeveloped skills.

Older employees in the age group 40-49 years in this study; however were found to have acquired occupational diseases (TB). A correlation is therefore made with a study by Alamgir et al (2007) which indicated that the relationship between work-related injury and age might be confounded by experience and healthy worker effect (Alamgir *et.al*, 2007).

Several studies though have demonstrated that the age distribution of healthcare workers affected by occupational injuries/diseases differs (Gopinath *et al,* 2004; Naidoo *et al*, 2006; do Prado, *et al,* 2008).

The socio-economic status of Limpopo districts was reflected by the findings of this study which indicate that the high rates of injuries/diseases emanates from Mopani district. Amongst all the five districts in the province, Mopani is known to be the most rural, underdeveloped and poorest district in the province which has since been even adopted by office of the president of the country as a nodal point (NDA, 2011).

A large proportion of HCWs who were affected by injuries/diseases in this study were nurses, EMS personnel and cleaners respectively. These health care workers were mainly affected by injuries more than diseases.

5.4 Occupational injuries by Demographics

The results from this current study indicate that in Limpopo healthcare facilities, the majority of employees sustained occupational injuries at an alarming rate. The most common injuries are NSIs, followed by STFs, MVAs, external impact injuries then assaults.

Of the occupational injuries reported, most were due to needle sticks amongst nurses, followed by doctors and thirdly cleaners. The gender of healthcare workers mostly affected were females in the age range of 20-29 years working at Mopani district. The reviewed studies also indicate that of all professionals, nurses in healthcare settings sustain more NSIs (Shiva *et al*, 2011; Vaz *et al,* 2010; Ghauri *et al,* 2011).

This study did not determine the circumstances under which NSI occurred as unlike other studies where the commonest clinical activity to cause needle stick injuries were found to be blood withdrawal, suturing, and vaccination (Muralidhar *et al,* 2010) and disposal of used syringes (Hofmann et al, 2002). Although NSI was found to be the most common injury amongst HCWs in Limpopo, the data does not indicate the employees who sero-converted following NSI.

The researcher would like to briefly give an overview of the top five injuries which affected the public HCWs in Limpopo Province:

Slip/trip/fall is the 2nd most common cause of injuries amongst workers in this study, where most nurses were injured followed by cleaners.STPs affected females employees above 40yrs, working at Vhembe district which is popularly known to be an evergreen, rainy and sloppy area. Bell et.al (2008) in their study also found that slip/trip/fall (25%) was the 2nd most common cause of injuries in the hospitals.

However motor vehicle accidents affected more EMS personnel then mobile clinic nurses as these professionals have to drive government vehicles to perform their duties. This is the only type of injury with different demographic results as males of 30-39 yrs of age were mostly affected from Waterberg district.

Injuries by external objects has a wide range of description which has not been detailed in this study but in here employees were injured basically by the environment, or the equipment that they use/repair e.g. doors, chairs and whole lot of others.

Violence was observed to be reported only where there was physical assault and still nurses led this category of injuries followed by cleaners and these were mainly assaults by patients. According to SA country study by Steinman (2003), EMS

personnel had high rates of both physical violence and psychological abuse from patients followed significantly by all categories of nurses.

Salerno et al (2009) reported that nurses are mainly the victims of verbal aggressive behaviour whereas doctors were assaulted more physically by patients. Steinman (2003) found that in SA doctors are mainly victims of verbal abuse and racial harassment.

In this study, majority of these injuries were mainly assaults by patients in psychiatric hospitals which is supported by the results of SA country study where the highest reported cases were at Tara psychiatric hospital. This finding is consistent with results from a 7-year Italian study that reported on persistently assaultive patients (Grassi et al 2006).Violence and injury are the 4th quadruple burden of disease in SA (DOH, 2011) and their morbidity affects HCWs as well.

It has been noted though that there is probably underreporting of violence to the occupational health clinics especially where there is no physical harm because cases of verbal threats or abuse are not reflected in this data. This was also evident in the report of SA country study where of all the physical assault cases reported, only 3% filled in the Compensation form whereas 38% decided not to report the cases for various reasons (Steinman 2003).

The above injuries give an indication that HCWs in Limpopo Province are exposed to physical, chemical, environmental & mechanical hazards and not ergonomics or psychosocial hazards.

5.5 Occupational diseases by Demographics

Of the occupational diseases the researcher observed that the majority were TB cases, which affected nurses in the age group 40-49 years. Previous study reports indicate that TB is one of the most common infectious diseases to cause morbidity and mortality worldwide (Khawcharoenporn et.al, 2010) .The mortality and causes of death report in SA indicates that TB is the leading underlying natural cause of death amongst both males and females aged 15-64 since 1997, accounting for 14.9% of deaths (Stats SA, 2008). It is also known internationally to be a poverty related disease and the level of mortality is one of the indicators of the well being and health

status of a population. The South African National TB Management guidelines (2009) indicates that the incidence of TB was 605 per 100 000 cases in the country whilst Limpopo Province carries 249 per 100 000 of those cases. Tuberculosis project in South Africa revealed that the average burden of TB amongst HCWs in all provinces was 2% as compared to 0.9% of the general population (URCSA, 2009).

The study further indicates that this high burden puts HCWs at increased risk of infection which makes them three times more likely to acquire TB because all these patients consult at healthcare facilities for diagnosis, treatment and care. This concurs with a retrospective study of TB in healthcare personnel working at a general hospital which observed that there is high cumulative incidence of TB in the hospital and that the risk of transmission among HCWs is even higher than that of the general population (Casas *et al*, 2004).

A question arose from Conelly *et al (2007)* study that who is responsible for protecting HIV-positive healthcare workers from being exposed to potentially fatal opportunistic infections like TB in a healthcare setting?

In this study employees have acquired this potentially fatal opportunistic infection and although their HIV status has not been established evidence shows that TB is a common opportunistic disease among HIV positive patients (Shisana *et al*, 2004).The study by Shisana *et al* was supported by Harries *et al* (2002) who found that in 60 Malawians HCWs who died of AIDS, the leading cause of death(47%) was TB.The Minister of health in his budget speech also indicated that currently, the TB and HIV co-infection rate in SA is the highest (73%) in the world (DOH,2011). HCWs in Limpopo Province are mostly therefore exposed to biological and infectious hazards which cause diseases.

5.6 Outcomes of Occupational injuries and Diseases

Injuries and diseases may lead to several outcomes including HIV sero-coversion, disability, deaths, lost working days, and financial costs. Based on the findings from this study with regard to fatal injuries, not only did employees acquire occupational diseases or sustain occupational injuries, they also lost their lives during the course of duty.

This study indicated that four EMS personnel died due to motor vehicle accident. The findings on the death of emergency personnel is consistent with reports by Centres for Disease Control and Prevention (CDC) that between 2002-2007 MVAs were the leading cause of occupational deaths (NIOSH,2010) with an estimated fatality rate of EMS personnel in the United States is 12.7 per 100 000 workers (JAMA,2003).

The study identifies an occupational fatality rate for EMS workers that exceeds that of the general population and is comparable with that of other emergency public service workers.

With regard to Costs incurred, the employer is mandated by the Compensation for Occupational Injuries and Diseases Act to cover the cost of injuries sustained and diseases acquired. Table 8 indicates clearly that during the study period, the employer took responsibility by covering the medical costs (Doctors, laboratories, medical aids, private emergency services and hospitals/clinics), travelling expenses to and from service providers, legal expenses where the service provider demanded payments following delayed payments, funeral expenses where employees died and administrative costs(provincial treasury and compensation commissioner).

These costs represent an average of 75 % of the provincial state claims budget over the study period (DoH HR COID Officer, 2011). In addition, the funeral expenses indicate payouts to five (5) employees during 2007 whereas the data indicates fatal injuries to four (4) employees. The data does not reflect the days lost due to all these injuries (occupational sick leave) hence costing lost days was not possible

5.7 Limitations of the study

Based on the cross-sectional design of this study, the causal nature of a relationship between injury/disease and outcome as well as time sequence of events could not be established (Joubert & Ehrlich, 2007).

The relationship between injury/disease and disability/death could not be established hence amongst the employees who sustained needle stick injury, it is not clear who acquired HIV through sero-conversion or who died due to AIDS post sero-conversion

if any. Same with TB, it is not clear whose disease progressed to MDR /XDR and who eventually succumbed to the disease.

The compensation awards granted to employees who were permanently disabled was also not included in the data hence the data does not indicate the number of employees who were permanently disabled due to injury/disease.

The days lost due to injury/disease was also not reflected hence could not be reflected nor costed. The study could not therefore comprehensively assess the COID cost due to the limitations stated above.

5.8 Conclusions

- In conclusion, this study demonstrates that tuberculosis is the most common occupational disease acquired by HCWs which relates to the fact that it is the leading cause of death in SA.
- Needle stick injury is the most common occupational injury sustained among healthcare workers.
- Professionals that were mostly affected by injury/disease were nurses except in MVAs where EMS personnel sustained most injuries and sadly all fatalities.
- The fatalities due to MVAs reflects that ,that which affect the general population will also affect HCWs because violence and Injury is the 4th burden of disease in SA.
- The age distribution for injuries/diseases varied although in three instances (TB, STFs & Assaults), employees above 40 years (40-49) were affected.
- Males were mostly affected by injuries/diseases even though the department is predominantly female.
- Mopani district which is the president nodal point because of poor development is the leading district with regard to all injuries and diseases except for STPs in

Vhembe district which can be linked to climatic and geographical presentation of the area.

- There were employees who died due to workplace injuries although the other outcomes were not determined.
- The costs of injuries/diseases could not be comprehended.

5.9 Recommendations

In line with the findings from this study, the following recommendations are made:

- Preventive measures such as TB infection and control programs in healthcare institutions need to be strengthened.
- Occupational health and TB to be included in all HCW training packages.
- Routine quality control measures where TB training and audits for employees are conducted need to be established.
- HCT campaign to be extended to these carers at a standard above the level they offer this service.
- Medical Surveillance programs in Occupational health clinics to be mandatory for all HCWs.
- Continuous workshops on awareness of the risk of needle stick are required.
- Utilization of retractable needles be enforced
- Further research on the causes of STPs is required prior recommending interventions.
- EMS personnel, mobile nurses and drivers to undergo advanced driving training.
- Improve security measures by installing electronic devices

- Upgrade reporting database for injuries/and disease
- Appoint personnel specifically to monitor progress and outcome of COID cases.
- Capture and cost occupational leave and compensation awards granted to employees.
- Risk, Occupational Health, Employee Health and Wellness directorates to engage and communicate with each other for employee's interventions.

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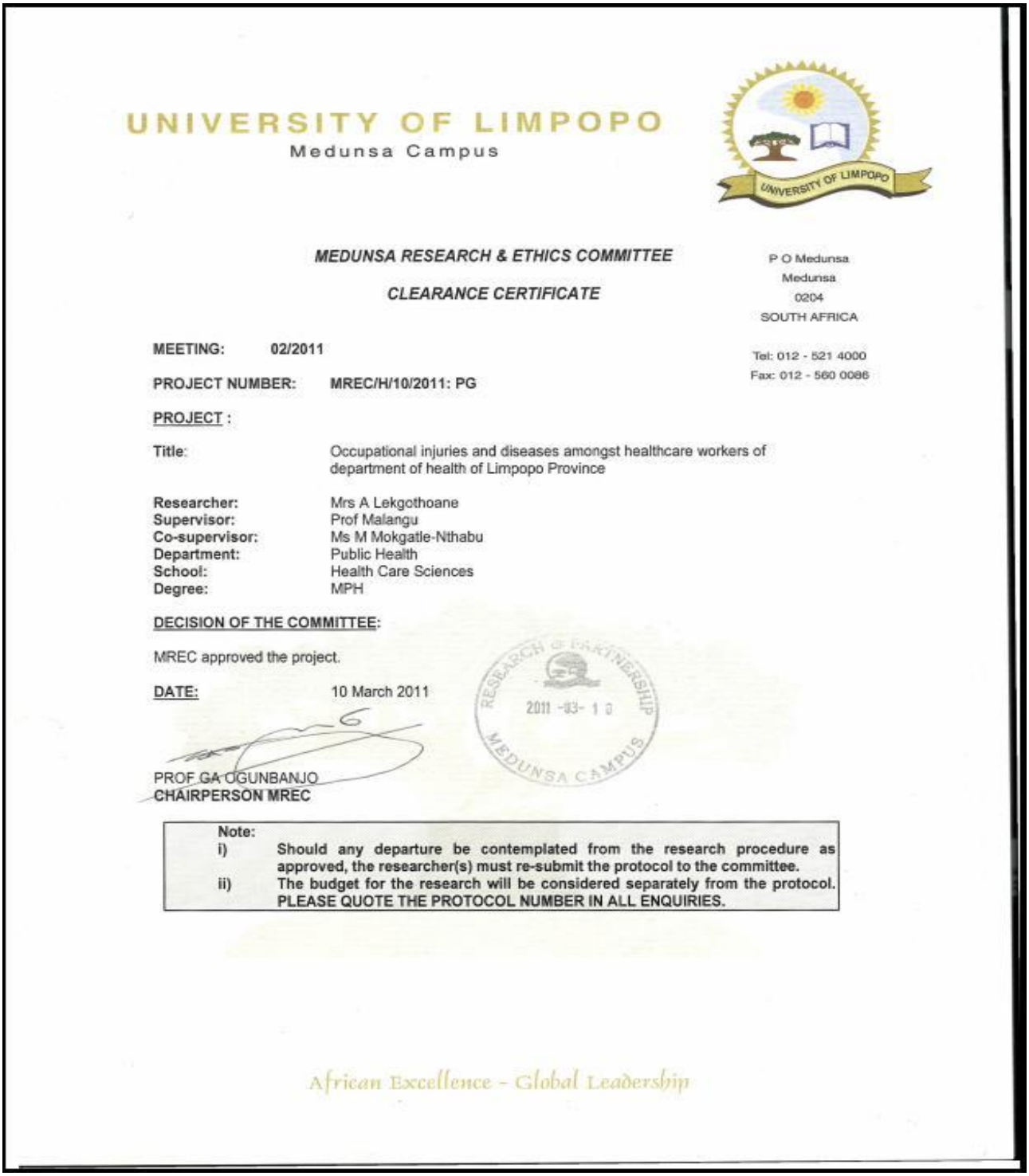
APPENDICES

University of Limpopo: Medunsa Research & Ethics Committee Clearance Certificate



UNIVERSITY OF LIMPOPO
Medunsa Campus

MEDUNSA RESEARCH & ETHICS COMMITTEE

CLEARANCE CERTIFICATE

P O Medunsa
Medunsa
0204
SOUTH AFRICA

Tel: 012 - 521 4000
Fax: 012 - 560 0086

MEETING: 02/2011

PROJECT NUMBER: MREC/H/10/2011: PG

PROJECT :

Title: Occupational injuries and diseases amongst healthcare workers of department of health of Limpopo Province

Researcher: Mrs A Lekgothoane
Supervisor: Prof Malangu
Co-supervisor: Ms M Mokgatle-Nthabu
Department: Public Health
School: Health Care Sciences
Degree: MPH

DECISION OF THE COMMITTEE:

MREC approved the project.

DATE: 10 March 2011

RESEARCH & PARTNERSHIP
2011 -03- 10
MEDUNSA CAMPUS

PROF GA OGUNBANJO
CHAIRPERSON MREC

Note:
i) **Should any departure be contemplated from the research procedure as approved, the researcher(s) must re-submit the protocol to the committee.**
ii) **The budget for the research will be considered separately from the protocol.**
PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES.

African Excellence - Global Leadership

Department of Health Permission Letter

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF HEALTH

Enquiries: Selamolela Donald
Ref: 4/2/2

22 July 2011
Lekgothane A
University of Limpopo
Medunsa
0204

Greetings,

Re: Permission to conduct the study titled: Occupational injuries and diseases amongst healthcare workers of Department of Health in Limpopo Province

1. The above matter refers.
2. The permission to conduct the above mentioned study is hereby granted.
3. Kindly be informed that:-
   - Further arrangement should be made with the targeted institutions.
   - In the course of your study there should not be any action that will disrupt the services
   - After completion of the study, a copy of the report should be submitted to the Department to serve as a resource
   - You should be prepared to assist in the interpretation and implementation of study recommendations where possible

Your cooperation will be highly appreciated

Mafubelu

Head of Department
Department of Health
Limpopo Province

18 College Street, Polokwane, 0700, Private Bag x9302, POLOKWANE, 0700
Tel: (015) 293 6000, Fax: (015) 293 6211/20 Website: http/www.limpopo.gov.za

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